

# Chemical Week

February 4, 1956

Price 35 cents



► Congressional hearings coming up on atomic energy will show new paths to chemical firms . . . p. 13

Our loss is Europe's gain in battle for lush Latin American chemical markets . . . . . p. 38

Cheap nuclear power is in that awkward in-between stage: not too near, not too far . . . . p. 50

Ethylene output heads for two million tons/year by 1960. Here's why . . . . . p. 72

► City plants have their virtues, but plenty of specialties makers are building in the country . . . p. 82





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## TOP OF THE WEEK

February 4, 1956

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## THE GOOD EARTH IS TOUGH ON TIRES

Plowing, planting and cultivating America's ever-increasing harvests are grueling tasks for tractor tires. The punishing abrasions exerted by stones and earth, the tremendous thrust of traction, the long exposure to the hot sun . . . these call for tires of extreme toughness. Similarly, high speeds and long-distance driving call for extra durability in truck and car tires.

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## Priority and Patents

TO THE EDITOR: In your news item, "Voided by Disclosure" (Jan. 21), you . . . missed the point of an important decision by the U. S. Patent Office Board of Appeals (U.S.P.Q.).

It is not news that claims will not be allowed when inconsistent with evidence of prior knowledge. This is the well known tenor of prior decisions. However, the main point of the decision is news, and highly important news that should have been emphasized.

The U.S. Patent Office Board of Appeals agreed with Eugene Lorand that the date of receipt of a manuscript is not sufficient evidence of prior knowledge where the original manuscript is not available and the author and editor refuse to testify under oath as to the identity of the manuscript with the printed publication.

Heretofore, applicants have been required to show that their claimed invention was completed prior to the date of receipt of a manuscript by the editor as set forth in the printed publication. . . . Appeals heretofore have been decided against all previous applicants. However, Eugene Lorand attempted unsuccessfully to obtain a copy of the original manuscript, or, in its absence, to obtain testimony of the editor and the author to the effect that the manuscript was published as received and unaltered. The refusal of the author to testify convinced the Board of Appeals that the applicant was being denied his right of cross-examination, and the Board of Appeals, accordingly, ruled that in such a case the applicant did not need to show that his date of invention was earlier than any date other than the date of actual publication, which was the only verifiable date.

Eugene Lorand did not lose his appealed claims because of prior dis-

closure. He lost them because of insufficiency of his affidavit with respect to all of the species claimed.

Management should be informed that this decision modifies numerous prior decisions and provides the procedure for overcoming the "date of receipt of the manuscript" given in a printed publication.

R. F. COX  
Hercules Powder Co., Inc.  
Patent Division  
Wilmington, Del.

*We are grateful to Reader Cox for his elaboration on this technical point.—ED.*

## 'Excellent Balance'

TO THE EDITOR: I think you will be interested to know that I am one of the many thousands of regular readers of your very fine magazine. I might say that I know of no other that offers its readers the very excellent balance between easy reading, up-to-date information, and technical information. . . .

WILLIAM D. WILLIAMS  
Technical Director  
National Laboratories, Inc.  
Toledo, O.

## Learn from Russians

TO THE EDITOR: I am a regular subscriber to your very informative publication, which always seems to be well abreast of current events, not only at home, but also abroad. I was particularly impressed by the short item (Jan. 14) where you report in capsule form Soviet Finance Minister A. G. Zverev's pronouncement of Russia's anticipated outlay for scientific research of \$3.4 billion. I am also in wholehearted agreement with *CW*'s statement that "U.S. chemical research management might profitably scrutinize (wherever possible) Russian technical literature available here."

We have been doing just that sort of sleuthing through thousands of pages of Russian scientific journals and books that continuously come to our attention. We see considerable progress being made by the Russian scientists in various areas of the physical sciences, especially in chemistry and physics. Much of this information, although available, is not fully

utilized by our industry. This I believe, is due to two major reasons, namely: (1) lack of knowledge that such information is available, and (2) reluctance to concede that anything worth while might be learned from the Russian literature. In this connection, news items, such as the one referred to above, will do much to stimulate interest in Russian scientific literature. . . .

LEON JACOLEV  
Technical Director  
Associated Technical Services  
East Orange, N.J.

## SEE YOU THERE

**American Pharmaceutical Mfg. Assn.**, central section meeting, Edgewater Beach Hotel, Chicago, Feb. 6-8; western section meeting, Ambassador Hotel, Los Angeles, Feb. 13-14.

**Synthetic Organic Chemical Manufacturers Assn.**, luncheon, Palm Terrace Suite, Hotel Roosevelt, New York, Feb. 7.

**Society of Plastics Industry, Inc.**, 11th annual Reinforced Plastics Div. Conference, Hotel Chalfonte-Haddon Hall, Atlantic City, Feb. 7-9; Sheraton-Brock Hotel, Niagara Falls, Ont., March 8-9.

**Technical Assn. of Pulp and Paper Industry**, annual meeting, Commodore Hotel, New York, Feb. 20-23.

**Chemical Institute of Canada**, 10th Divisional Conference, Royal York Hotel, Toronto, Feb. 23; Sheraton-Mount Royal Hotel, Montreal, Feb. 24.

**American Institute of Chemical Engineers**, Statler Hotel, Los Angeles, Feb. 26-29.

**National Assn. of Corrosion Engineers**, annual convention, Hotel Statler, New York, March 12-16.

**Synthetic Organic Chemical Mfg. Assn.**, luncheon, Palm Terrace Suite, Hotel Roosevelt, New York, March 13.

**American Society of Mechanical Engineers**, aviation conference, sessions on high-temperature rocket engines, Hotel Statler, Los Angeles, March 14-16.

**Society of Plastics Industry**, 13th annual Pacific Coast Section Conference, St. Francis Hotel, San Francisco, March 27-April 2.

**American Oil Chemists' Society**, Shamrock Hotel, Houston, April 23-25.

**Assn. of Consulting Chemists & Chemical Engineers Inc.**, symposium and banquet, Hotel Belmont Plaza, New York, April 25.

*CW* welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



## 2 new-design **PAYLOADER®** shovels do the work of 4 previous units

The new-design model HA "PAYLOADER" has already proven that it is the production champion in its class. Long-time "PAYLOADER" users, as well as new owners, report new highs in production and new lows in bulk-material handling costs with the new HA. A typical report is from G. N. Williams, Supt. of Fertilizer Division of Planters Cotton Oil & Fertilizer Co. of Rocky Mount, N. C., who says, *"On manufacturing operations two new-design 'PAYLOADER' shovels are doing the job of 4 previous units. These new HA's load faster and easier, travel faster with better operator vision and increased operator safety. On manufacturing operation, these two HA's move about 400 tons under a good day's run on an average haul of 75 feet. We are still operating three older 'PAYLOADER' shovels purchased in 1946."*

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# Business

## Newsletter

CHEMICAL WEEK

February 4, 1956

**Further evidence of 1955 prosperity** came in the week's annual reports. Hercules Powder reported a 21% increase in sales (to \$188 million) and a 34% boost in net income (to \$19 million).

Air Reduction posted a \$12-million net, up 83% over 1955, up 21% on sales to \$149 million.

Monsanto Chemical, with the consolidation of Lion Oil under its corporate belt, showed \$522 million in sales and a \$42-million profit. Sales were up 18% and profits 21% over comparable 1954 figures.

Spencer Chemical, with its polyethylene production gradually increasing, posted a \$17-million sales record (an increase of 23%) for the first half of its fiscal year. Profit, however, was \$1.6 million, up only 2%. Reports president Kenneth Spencer: The company's plastic operations are "now contributing a profit although capacity operations have not yet been achieved."

Atlas Powder, despite a \$2.4-million flood damage bill for repair of Pa. plant, showed \$3.5-million after-tax profits—up 32% from 1954—on a 5% sales boost (to \$60.3 million).

Freeport Sulphur reported \$12 million in profits for the year, a rise of 22% over the previous 12 months.

Nopco Chemical reported a \$1.5-million net profit, up 16% from 1954.

**Nopco, incidentally, is discussing merger** with American Viscose, reportedly on an exchange of stock basis. The merger would help Viscose diversify its sales—80% of which are still in rayon, acetate and other textile fibers. It has previously talked merger with such companies as Hercules Powder. Too, a merger with Monsanto, with whom it owns Chemstrand, has often been rumored—but just as often denied.

**New water supplies will be forthcoming** for five Buffalo firms, following agreement with city officials. The city will build a \$6-million cooling water supply complex, and would lease it to the five firms—including General Chemical, National Aniline, and Socony Mobil. The industries would pay annual charges for a 25-year period, with title remaining in city hands.

**Not so lucky is Crown Zellerbach.** It has had to curtail newsprint production at its Ocean Falls, B. C., mill due to a critical—and unusual—water shortage. The area usually receives the most rainfall of the entire Canadian west coast.

Zellerbach will try rainmaking to get the mill back into operation. A Santa Barbara, Calif., firm has been given a three-month contract to try to "seed" clouds with silver iodide crystals.

**A new west Canada pulp mill** will be bigger than first planned. B. C. Forest Products Ltd. will spend \$36 million, rather than \$25 million, for its bleached sulfate mill at Crofton, on Vancouver Island. And, under terms of a new share-purchase agreement, Scott Paper Co. (Chester, Pa.) will take all output of the plant through 1977. Scott, in addition, will pay about \$15 million for a 28% interest in the company.

**A 300-tons/day ammonia plant will be built** by Petroleum Chemicals, Inc., at Lake Charles, La. The company, joint subsidiary of Continental Oil and Cities Service, will make official announcement soon.

## Business Newsletter

(Continued)

**A 30-million-lbs./year dodecyl benzene plant** will be built by Imperial Oil at its Sarnia, Ont., refinery. The plant, which will cost some \$38 million, will mark the first petrochemical venture of the Jersey Standard affiliate since establishment of its chemical products department late last year. The plant should make Canada self-sufficient in detergent alkylate.

**Procter & Gamble won't get a boost on fluoridated toothpaste** from the American Dental Assn. in time to help national promotion of its Crest toothpaste (*CW*, Jan. 28, p. 68). ADA this week reports it "is not aware of evidence adequate to demonstrate the claimed dental caries prophylactic value of Crest. Although clinical tests of the dentifrice are in progress, adequate information concerning its value may not be available for a year or more."

**But federal okay on fluoridated dentifrices** may soon be extended to tooth powders. The Food & Drug Administration proposes to allow such sale without a doctor's prescription.

**Anti-water-fluoridation forces**, by the way, have come up with two new gambits. In a letter to the Niagara Falls, N. Y., city council, one such group said it was compiling a tourist directory "for the benefit of the 40 million Americans who voted against fluoridation." Also planned: erection of "suitable" signs at the outskirts of all communities that fluoridate their water.

**Will liquid detergents take over a big share of the market?** Lever Bros. thinks so. It's joining Armour (which markets Gee) with its Wisk. First marketing locations: Cleveland, St. Louis, Indianapolis and Grand Rapids. It emphasizes that these aren't "test markets"—it's in to stay. And Lever is moving fast, figuring P&G and Colgate may be on the market soon.

**There's speculation**, too, on whether P&G may move into consumer-type deodorant soaps. It's testing a pink Camay with and without bacteriostat.

**Atomic radiation may be the key to nematode control.** That's the speculation of Brookhaven scientists, reported in AEC's new semiannual report, out Monday. Thesis: irradiation of seed potatoes or strawberry plants from infected areas sterilizes nematode worms, prevents spread of the infestation. Prognosis: "Preliminary investigations along this line are very encouraging."

**The government is foreclosing** on the Westmoreland Manganese Corp. plant at Cushman, Ark., to get back money loaned the corporation in 1952 and 1953 for construction of a manganese processing plant. The government received a \$2.9-million judgment last year, appeal of which was taken to federal appeal court. Company officials also unsuccessfully sought to stay the foreclosure without filing the customary supersedeas bond. It's problematic whether they could get appeal court rulings before the sale, scheduled for Feb. 7-8.

**Will a state's tariff stand affect its attractiveness to new industry?** Yes, says Monsanto Board Chairman Edgar Queeny. Speaking to members of the Little Rock, Ark., Chamber of Commerce, Queeny said he realized that many of his audience "hold traditional Democratic views of free trade," but he urged them to study the case for high tariffs because "you are interested in attracting manufacture to Arkansas."

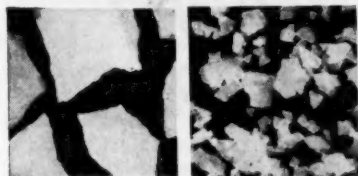
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for buyers of

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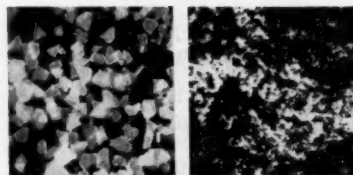
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3. Every drum is lacquer-lined to prevent iron contamination.
4. Six sturdy lugs hold the drum lid tight during handling and storage. They're handy for re-sealing the drum, too.
5. We individually lacquer the lid of every drum, to make an airtight seal that keeps the product at full strength.

The clean, strong flakes dissolve right into process, even without stirring. No waiting; no decanting.

You've probably gathered by now that sodium sulfide, at Hooker, is a specialty of the house. You're right. And that's a good reason why you stand to get maximum satisfaction with ours.

The flake form is shipped in 90-lb. and 350-lb. drums. Solid form comes in 625-lb. drums. Why not order a trial quantity?

### Better pH control

What we said about sulfides also goes for Hooker *sodium sulphhydrate*, with this important difference:

Some processors are switching to our sulphhydrate, as a replacement for sodium sulfide. Why?

When sulphhydrate goes into solution, it forms less caustic soda than does sodium sulfide. Only half as much, in fact. So these processors are able to get more sulfidity, with less alkalinity, by using sulphhydrate. Maybe there's an idea here for your processing operations, if high pH is a problem in sulfide solutions.

Hooker sodium sulphhydrate dissolves rapidly, even in cold water. There's virtually no sedimentation even after long standing. You can get it in 90-lb. and 350-lb. drums. For more details, check the coupon.

### For Technical Data Sheets

on Hooker chemicals mentioned on this page, check here:

- ☐ Sodium Sulfide
- ☐ Sodium Sulphhydrate
- ☐ Caustic Soda

**How up-to-date** is your caustic data file? If you're a user of liquid caustic soda, here's some recent material to help you buy better:

- ☐ Caustic Soda Buyer's Guide. Pocket-size booklet lists advantages of 73% and 50% caustic concentrations; comparative costs; includes nomograph for figuring savings with 73%.

Clip and mail today with your name, title, company address.

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**HOOVER ELECTROCHEMICAL COMPANY**

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## *We've been concentrating for over half a century...*

... on making and supplying the highest quality white mineral oils and petrolatums for use in processing and in product formulations.

As a result, we have acquired a good deal of scientific information and practical know-how which we are sure can be profitably used to serve you in two ways:

*First*, we can serve you by supplying you with the type of white oil or petrolatum exactly suited to your specific needs... tailor-making it if necessary.

*Second*, we shall give you the benefit—in product quality and technical assistance—of more than half a century's experience in producing white oils and petrolatums and helping industry use them more profitably.

Because white oils and petrolatums are specifically our business, we believe we have more to offer you—productwise and servicewise—to help you turn out a better product. Please feel free to call or drop us a line, anytime!

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RESEARCH

**L. SONNEBORN SONS, INC., New York 10, N. Y.**

**SPECIALISTS IN WHITE OILS AND PETROLATUMS FOR OVER HALF A CENTURY.**



## No Difficulty Foreseen

Though Republic Steel and Crane Co. foresee little or no difficulty in getting quick government okay to Republic's purchase of a half interest in Cramet, Inc., Crane's titanium producing subsidiary, that outlook may be somewhat anticipatory.

Reason: approval of the sale must be forthcoming from Federal Trade Commission, Dept. of Justice, and General Services Administration.

The very fact that Republic already produces titanium could make FTC or Justice somewhat reluctant.

And GSA, at least, could be somewhat sticky about giving its nod, especially since Crane's original contract to build the plant with government loan assistance specifically denies it the option of divesting any part of financial or management control of the sponge titanium plant. Thus, GSA will probably not make hasty decisions on the issue.

Nevertheless, as matters stand now, Republic's offer to buy half-interest in Cramet still holds. Price has not been disclosed, but it could well be over \$13 million (since Cramet's plant cost \$25 million-plus to build).

And, if effected, the deal would result in a bona fide 50-50 ownership. Both firms would sit in equal force on Cramet's new board.

On the other hand, even if government approval is forthcoming on ownership changes, Cramet's titanium production will still go to the government for aircraft and engine use.

For Republic, government "thumbs up" would mean more strengthening of its position on the titanium "ground floor." Even now, the steel company is racking up profits from titanium and titanium alloy production.

In fact, Republic set all-time records for itself last year. Net earnings were \$86.3 million (compared with \$52.9 million in 1954).

One added sidelight: Crane's Marine Minerals subsidiary (which began mining its large rutile and ilmenite ore deposits in March '55) will not be affected by the joint ownership if it crystallizes. That's because Cramet has no financial interest in Marine Minerals.



CONGRESSIONAL HEARING: An important one is ahead as solons begin . . .

## Probing Atomic Horizons

Hearings will begin in Washington next week that will markedly affect the chemical industry. Involved is the industry's stake in atomic energy, as congressmen ask whether full use can be made of our atomic know-how under current government laws and regulations.

This Tuesday, congressmen received a monumental document on the subject—a document that may cause a second drastic revision of the nation's atomic energy program.

The work reports 10-months' study of the impact on the American economy of peaceful atomic energy applications. It was prepared by a nine-man panel, which consulted more than 350 industry leaders and examined thousands of government reports. Their findings will be a working guide for members of the Joint Senate-House Committee on Atomic Energy, which will hold the upcoming hearings.

As a result of its investigation, the panel, headed by New Mexico publisher Robert McKinney, makes well over a score recommendations, many of direct interest to chemical companies. It recommends:

- Complete removal of secrecy

regulations of all technical data on chemical processing of used atomic fuel elements, fuel element fabrication, and, generally, all reactor technology. Information security restrictions should be used only when such information has a direct military application.

- A change in the 1954 Atomic Energy Act, which requires federal ownership of such materials as plutonium, U-235 or U-233, with a view to someday allowing private ownership.

- Stepped up federal research and development, including generous support of universities and private research centers.

- Preparation by the Atomic Energy Commission, from time to time, of a rundown listing the type of research it is carrying on, to allow industrial firms to know what AEC is doing.

- Establishment of commission policy on patents, and continuation of the provision in the 1954 atomic law for compulsory licensing of basic patents through 1959.

- Re-examination of the long-standing concept that all atomic in-

formation is "secret" until freed.

There are several controversial points in these and other McKinney panel recommendations. Perhaps one of the most important concerns information policies.

**Birth or Death:** Even before the first reactor "went critical" in Chicago's Stagg Stadium more than a decade ago, the Manhattan Engineering District adopted the concept that all information in the field of atomic energy was "born" classified, until determined by the government to be of no military value. When it took over in 1946, AEC adopted this view.

The panel would change this. Urging re-examination of the basic concept on grounds it is not compatible with speedy development of the civilian program, panel members would leave under secrecy restrictions only those reactor data confined exclusively to military needs. This means that all information on reactor design, components, materials, and associated equipment would be made available to the public, without such blocks as the present "need-to-know" industrial clearance program.

**Now or Forever:** The panel agrees that the present situation demands government ownership of all fissionable materials. But it recommends a change in the law requiring continual review of this policy so private ownership can be provided for when enough reactors have been built to provide a stable market for fuels.

It has two reasons: one is the natural repugnance of a group of businessmen for a government monopoly. The other is the knowledge of these businessmen that government ownership and control of a basic raw material carries with it a broad control function which touches all of industry. The force of government becomes an operational problem, to be dealt with every day by the companies within that industry.

The McKinney panel looks for the day when government control can be removed. It has considerable backing in Congress, and strong elements within AEC are working toward this goal.

**Ball or Chain?** Throughout the McKinney report runs the warning that if industry does not pick up the ball and prove out the most promising applications of atomic energy, the government will be forced to do so.

Such a warning is specifically made in regards to reactors for process heat, though it reports that AEC is, unfortunately, about the only organization that has the facilities to conduct metallurgical research necessary for such high-temperature reactor development.

Also recommended: A step-up in the government's research on atomic radiation use in material processing, plus support for private efforts in this direction.

## Object Lesson

A new range of chemical patents is available for licensing, royalty free, to anyone who is interested. Among them are grants on silicon and germanium crystal-growing, metallurgy, plating, insulations, dielectrics, plastics, polyethylene, ethylene diamine tartrate crystals, special enamels, nylon, and neoprene—among others.

Why can you get them now? American Telephone & Telegraph Co. and its wholly owned Western Electric subsidiary have agreed with the government's Justice Dept. to a consent decree settling an antitrust court case.

But while chemical firms may profit from the availability of these patents, the implications of the decree may also warrant a re-examination by compa-

nies of their patent licensing procedures, especially where patents are a substantial part of a firm's working assets.

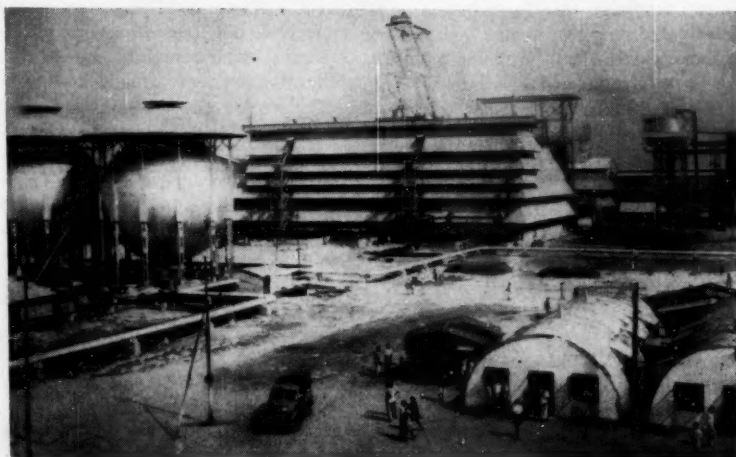
Under terms of the decree, all existing AT&T patents—some 8,600, which comprise the firm's contribution to a patent-exchange pool with RCA, GE and Westinghouse in which each could use any patent in its own manufacturing sphere—must be licensed royalty-free to any domestic asker (except the other pool members).

As far as future AT&T patents are concerned, these too must be licensed to all comers at reasonable rates—fixed by court order if the parties cannot agree between themselves.

For chemical companies with heavy stakes in patent licensing, this latest Justice Dept. victory should come as an object lesson. In fact, more than one chemical company (among them, Du Pont, ICI, Wallace & Tiernan and Celanese) have already been targets of similar court decisions involving patent licensing.

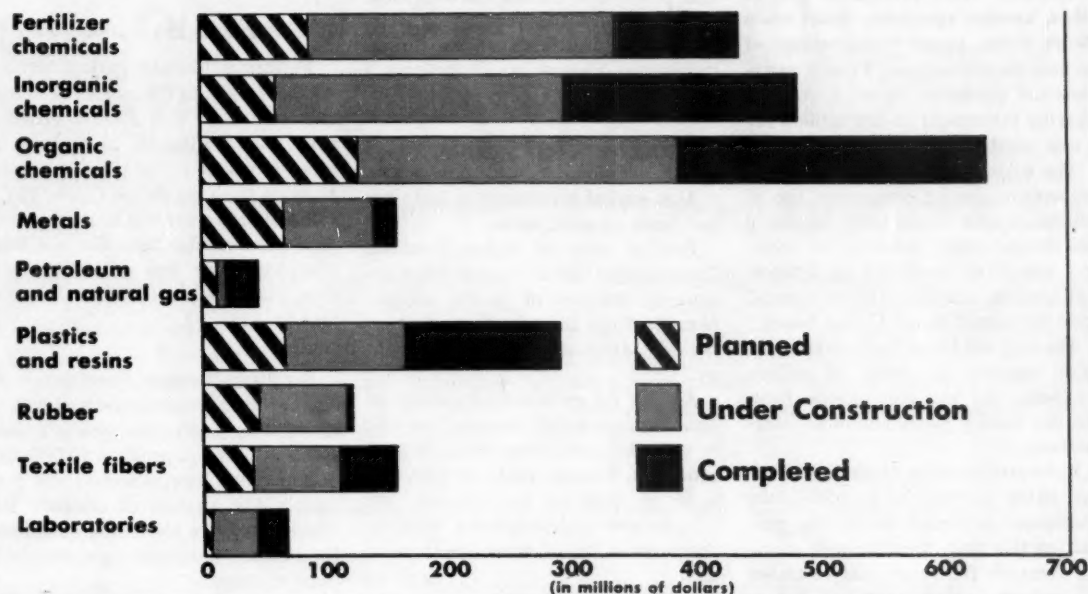
These earlier precedents, plus this new case, where AT&T consented to this Justice Dept. demand, again give chemical firms a point to ponder: while a patent is a government-sanctioned monopoly, patent agreements signed by two or more companies that in some way limit competition between these companies will more and more become a trust-busting target.

## Bigger Production, Broader Market



A 60% EXPANSION of this government-owned Indian fertilizer plant at Sindhri (near Bihar) will allow it to make a strong bid for markets, not only in India and Pakistan, but also elsewhere in Middle and Far East.

## MCA EXPANSION SURVEY



## Building, Building, Building

The chemical industry's expansion for the next two years will total \$1.6 billion. That's the word from the Manufacturing Chemists' Assn. annual survey. Also reported: construction projects completed during 1955 totaled \$772 million.

The survey covered 599 projects, 269 of which were completed during 1955. An additional 246 projects now under construction will cost an estimated \$1.1 billion when completed. Another 84 expansion projects on which companies are definitely committed, but where construction has not started, will cost an estimated \$507 million.

Total projects completed in 1955, plus those under construction or definitely planned for completion within the next two years: \$2.3 billion.

**By Areas:** The survey shows the South and Southwest, Far West, and Middle West as having the greatest expansion. Texas, the third ranking chemical producing state, led the way in new chemical construction with 66 projects costing an estimated \$414.8 million completed last year, under way or definitely scheduled for this year. California was second with 49

projects valued at an estimated \$185.8 million; Ohio, with 38 construction projects amounting to \$152.6 million, was third. Louisiana, West Virginia and Georgia showed chemical investments of more than \$100 million each. Florida's 1955 estimated investment was \$93.2 million in 15 projects.

Consolidation of completed, under construction and planned expansion figures shows that in 1955 the industry made its heaviest commitment, \$633 million, in heavy and fine organic chemicals. The second largest, \$481 million, was in the field of inorganic chemicals. Third, \$433 million, was for fertilizer chemicals.

Plastics and resins were next, with \$288 million. Added facilities for the production of man-made textile fibers accounted for \$155 million. New construction and expansion of synthetic rubber facilities brought an investment estimated at \$117 million.

The industry invested an estimated \$154.7 million for chemical production of metals and alloys, primarily titanium. Not included are spending for such metals as iron, copper and aluminum, though spending for alumina is in the total. More than \$68.8

million is being spent for new research facilities. Chemical construction for petrochemicals, where the cost of such facilities could be separated from that of normal refining operations, totaled \$46.8 million.

Not included in the MCA totals is a reported \$3.3 billion of government-financed chemical construction under way or completed in the calendar year 1955, most of it under contract with chemical companies. This construction includes seven expansions and two new chemical plants for the Atomic Energy Commission, as well as other government chemical plants.

**By Comparison:** The MCA figures are not comparable to those on capital spending compiled by the Securities & Exchange Commission, or to those by the McGraw-Hill Dept. of Economics, since both of these include everything spent during a year—not just the value of completed plants. Thus, MCA gets its \$772-million figure (black area in chart) for plants completed in 1955, contrasted with approximately \$1 billion in other estimates. Another difference: while other figures categorize spending by the principal business of the company involved, MCA has attempted to list every chemical project, no matter by whom it is built.



## Return Trip

Ethylene oxide production got, in effect, another round-trip ticket when Pierre Rubé, genial vice-president of Societe Naphthachimie, French petrochemical producer, signed a contract okaying investment of \$30 million for a new ethylene oxide plant at Lavera.

The expansion, another instance of the ever-increasing continental use of volume-process know-how, marks a full circle—direct oxidation of ethylene was first developed in France, with the later adaptation to commercial scale performed in the United States.

The unit will bring Lavera's ethylene oxide capacity to about 30 million lbs./year, and will also include facilities for making glycol and other intermediates.

Rubé attributes the expanding ethylene oxide market to a 15% hike anticipated in French automobile production this year, together with growing demands for paints and varnishes—which use ethylene oxide derivatives. The project will be engineered by Scientific Design Co. and is slated for completion in June '57.

The expanded plant is expected to meet France's needs for the future, with some left over for export within Europe.

While a spokesman for one large American producer and exporter

termed the new French production figures a "pittance," compared with U.S. production (which will total close to 1 billion lbs. this year), he also indicated that further such expansions throughout Europe could threaten a substantial part of U.S. export markets.

## New Capital Flow

**U.S. capital investment in Italy has just been sparked anew.**

For, as soon as Italian President Cronchi signs into law a new bill guaranteeing transfer of profits gleaned from holdings there, a fresh flow of capital is expected to sweep that country.

And as far as chemical companies here are concerned, the new law will be welcome news when it finally goes into effect. Reason: then, no limit will be set on dividends and earnings that U.S. citizens and companies with investments in Italian firms can transfer here.

Until now, a restrictive limit (of 6%) on capital proceeds discouraged U.S. funds from flowing to Italy. So, in effect, the new ruling is an invitation for U.S. companies to "come to Italy."

For joint U.S.-Italian enterprises (and there are many U.S. companies so set up—among them Monsanto and Squibb) transfer of investment profits out of Italy will probably mean greater

outlays for expansion of their operations there.

## FOREIGN. . . . .

**Fertilizers/Finland:** Parleys between Potasse & Engrais Chimiques of France and TYPPI O/Y, a Finnish concern, have just resulted in a contract to build a new fertilizer plant in Ohalu, 80 miles from the Arctic Circle. PEC's carbonitric process will be used to produce 400 tons/day from German Kola phosphate rock and potassium chloride. The new plant will be in operation by June '57.

**Fertilizers/Ireland:** Construction of new fertilizer plants in Ireland will be under way early this year—a new plant at Cork will produce 50,000 tons of superphosphate; a second will produce a like amount of complex fertilizer. Plans are also being completed for a 20,000-tons/year superphosphate plant at Sligo.

**Pharmaceuticals/Holland:** Haarlem in the Netherlands has been named as the site of Merck's Sharp & Dohme Division's new pharmaceuticals plant—the company's first venture on the European continent. It's scheduled to be in operation by the end of this year with production going mainly to European and Near Eastern markets.

## EXPANSION. . . . .

**Feed Supplements:** By June 1, Charles Pfizer and Co. will have more than doubled production capacity for animal feed supplements at its Terre Haute, Ind., plant.

**Sulfur:** Pan American Sulphur Co. will begin work shortly on a \$1.5-million plant expansion at its Jaltipan Dome in Vera Cruz, Mexico. Production capacity will be hiked from 2,000 to 3,000 tons/day of sulfur.

**Cement:** General Portland Cement Co. will build a \$10-million cement plant near Miami, Fla. Capacity: 1.25 million bbls./year.

**Plastics:** U.S. Rubber Co.'s Naugatuck Chemical Division will double the present styrene-butadiene-acrylonitrile copolymer plastic production



NAPHTHACHIMIE'S RUBE: His visit sparks a round-trip.

CHRIS GRUBB



## Washington Angles »»

»» **Opposition to proposed stiffer merger laws** (CW, Jan. 28, p. 23) is beginning to be heard. The U.S. Chamber of Commerce, testifying before the House Judiciary Committee, says requirements that the Federal Trade Commission get prior notification of mergers and tougher enforcement powers will penalize small business, since it would impede the coalition of small companies, which would increase competition.

»» **The top chemical industry union leaders**, Jack Knight of the Oil, Chemical and Atomic Workers, and Edward Moffett of the Chemical Workers, were in Washington last week to help plan the AFL-CIO's upcoming organizing campaign. While both met with Jack Livingston, director of the campaign, on the same day, Livingston reports there is "no signifi-

cance" that both were there simultaneously.

Some "real decisions," however, are promised from next week's meeting of top AFL-CIO leaders in Miami.

»» **How big must a phosphate lease be** to be profitably mined? The House Mining subcommittee has okayed a bill to double the size of phosphate lease any one person can hold on public land in one state—to 10,240 acres. That was the amount that such miners, in testimony, felt would be economic. Public land phosphate mines account for 10% of total U.S. production.

»» **"Illicit traffic" in strategic materials** between Western nation shippers and Red China will be probed by a Senate Government Operations subcommittee. Congressmen are worried that U.S. allies, particularly Britain, are contributing to the Chinese war economy by increasing size of shipments.

capacity (now over 10 million lbs./year) of its Baton Rouge, La., plant. Additions should be completed by July '57, will cost \$5 million.

**Sodium Phosphate/Phosphoric Acid:** Early this month, at Miller Switch, southeast of Dallas, Tex., Shea Chemical Corp. will begin construction of a \$1.5 million sodium phosphate and phosphoric acid plant. Target date is set for early October. Capacity: 60,000 tons/year.

**Aromatics:** British American Oil Co. plans to build a \$4-million catalytic reformer unit at its Toronto refinery, to process 10,000 bbls./day of naphtha. It will use platinum catalyst.

**Rutile/Ilmenite:** Metal & Thermit Corp. (New York) will construct a \$750,000 plant near Montpelier, Va., to produce rutile and ilmenite from titanium-bearing ore. Completion is set for fall.

**Paper:** The Hammermill Paper Co. (Erie, Pa.) will erect a multimillion-dollar pulp and paper mill, probably near Franklin, Pa.

**Formaldehyde:** Borden Co.'s chemical division will erect a \$1-million plant at Kent, Wash., to produce 36 million lbs./year of formaldehyde. Operations, scheduled for the end of

'56, will be coordinated with present formaldehyde output at Springfield, Ore., which itself has a 36-million-lb. capacity rating.

**Adipic Acid:** A \$3.5-4-million plant for large-scale production of adipic acid, located at the Luling, La., plant of its Lion Oil subsidiary, is being constructed by Monsanto Chemical. Onstream date: early '57.

**Ammonia:** Quebec Ammonia Co. will construct an \$8-million ammonia plant at Varennes, Que., Canada. Capacity: 125 tons/day of anhydrous ammonia, nitric acid, and fertilizer solutions.

## COMPANIES . . . .

**Corning Glass Works** has organized a refractories division to consolidate its conventional refractory production with its new chromic oxide, zirconium silicate, and stabilized zirconia operations.

**A new Wisconsin corporation**, Metalglass Laboratories Inc., has been formed in Madison, Wis. (1,000 shares of no-par common stock authorized) for producing industrial cleaners and polishes.

**A 25-year lease** has been granted to National Lead Co., permitting the firm

to prospect for titanium and other minerals on 1,500 acres of Hilton Head Island, Ga.

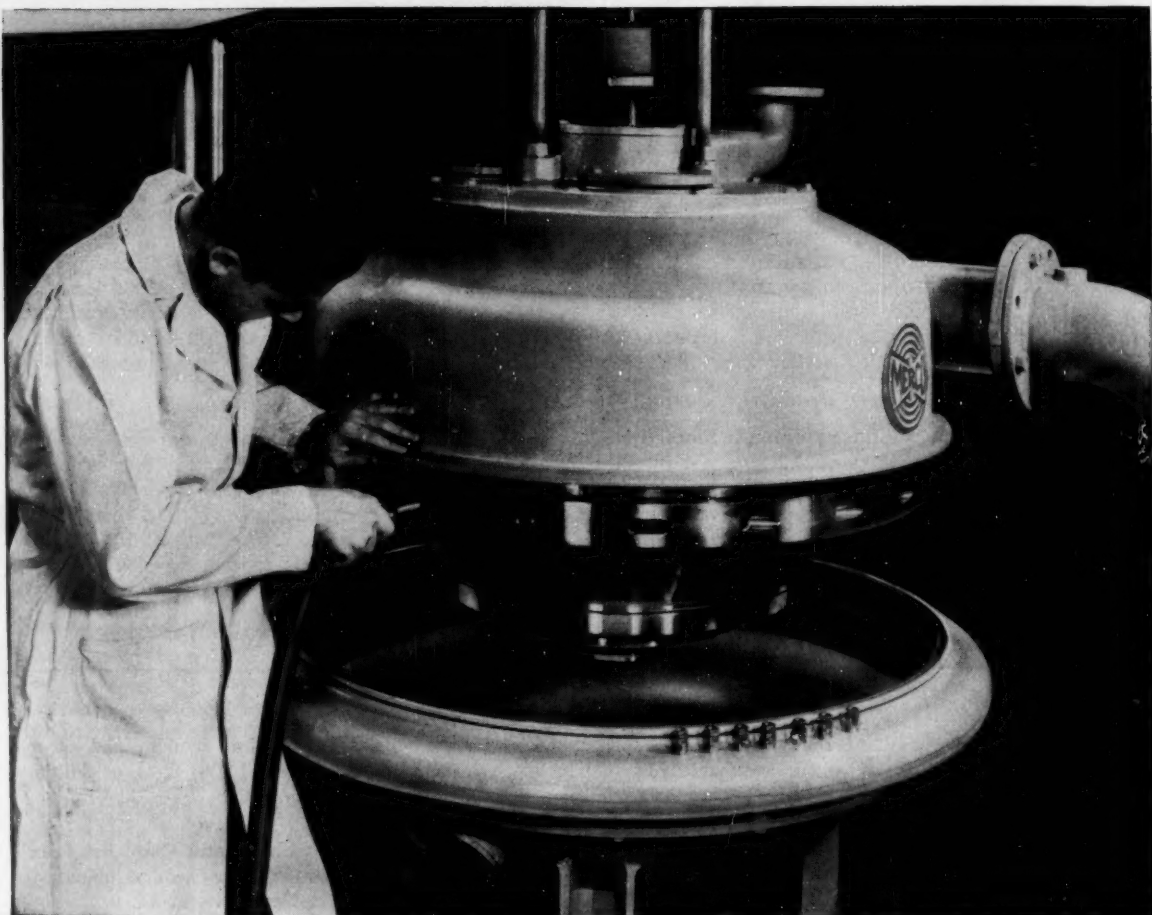
**Corrosion Control Corp.** has been incorporated as a chemical manufacturer in New Orleans, La.

**Chipman Chemicals Ltd.** (Montreal, Canada) has decided to establish central administrative offices in Hamilton, Ont., considered the pesticide consuming center of Canada. The offices will also house pesticide operations of Canadian Industries, Ltd., which was merged with Chipman.

**One of the Rockefeller enterprises**, International Basic Economy Corp. (IBEC), has sold its half interest in Gould Paper Co. to Lyons Paper Corp.

**Stock interest** (\$3.5 million in debentures and common stock) has been sold by Foster Grant Co. outside its own management. Purpose: to help finance a \$1.7-million styrene monomer expansion at Baton Rouge, La. New capacity: 48,000 tons/year.

**Sheffield Chemical Co. Inc.** (Norwich, N.Y.) is now a separate operating division of Sheffield Farms Co., Inc., a subsidiary of National Dairy Products Corp.



The separating force produced by this Merco centrifuge is made practical by the strength of its high speed rotor bowl, machined from cast stainless steel with a high nickel content, produced by Electric Steel Foundry Company, Portland, Oregon. Weight of the all-stainless steel rotor

assembly on the unit shown above totals 1600 lbs. This centrifuge has a large continuous through-put capacity. In many plants, Merco units run continuously for 24 hours, virtually unattended. Manufactured by Merco Centrifugal Company, San Francisco, California.

## Up to 9000G's developed ... thanks to strength of rotor cast in stainless ... that licks corrosion and erosion

Merco Centrifugal Co. tested scores of materials for their centrifuge rotors. And found what they needed in cast chromium-nickel molybdenum stainless steel (ACI Type CF-8M.) These castings safely answer the high strength demands, and in addition, provide resistance to both corrosion and erosion.

Read what a typical customer reported about the performance of a Merco rotor machined from this cast stainless steel containing 10 to 12%

nickel:

"... shows no signs of corrosion after 12 years' service in slurries of warm weak sulfurous and lactic acids, SO<sub>2</sub> vapors, alternate wetting and drying, with liquid and solids passing over the metal surfaces at very high speeds."

Despite corrosives and suspended solids, this rotor has operated for more than a decade with no apparent damage from erosive action. Many similar records confirm that Merco

engineers made a wise choice, years ago, when they selected Type CF-8M stainless castings for rotors.

Alloys containing nickel may help you strengthen equipment, combat corrosion and erosion, or meet other specific needs. When you face a metal difficulty, send us details. We'll submit suggestions based on wide practical experience. Write for List A of available publications. It includes a simple form that makes it easy for you to outline your problem.

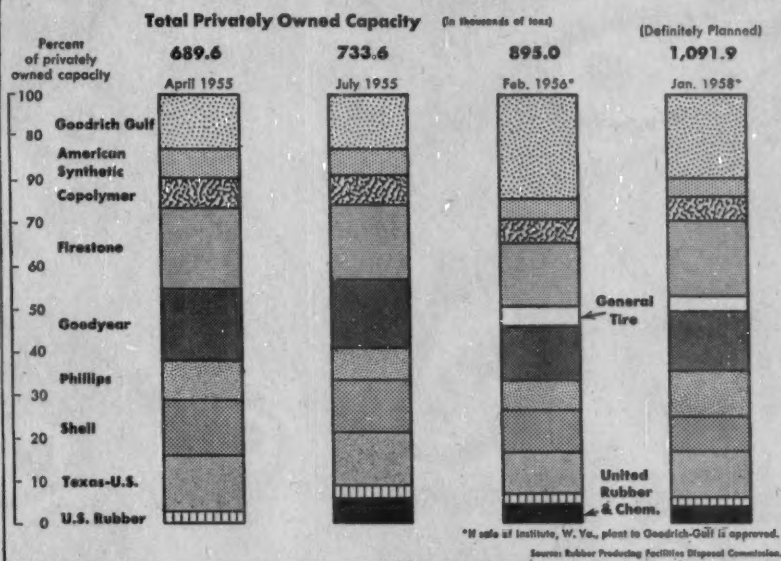


**THE INTERNATIONAL NICKEL COMPANY, INC.** 67 Wall Street  
New York 5, N. Y.

# Charting Business

CHEMICAL WEEK  
February 4, 1956

## Industry's GR-S Stake Grows and Shifts



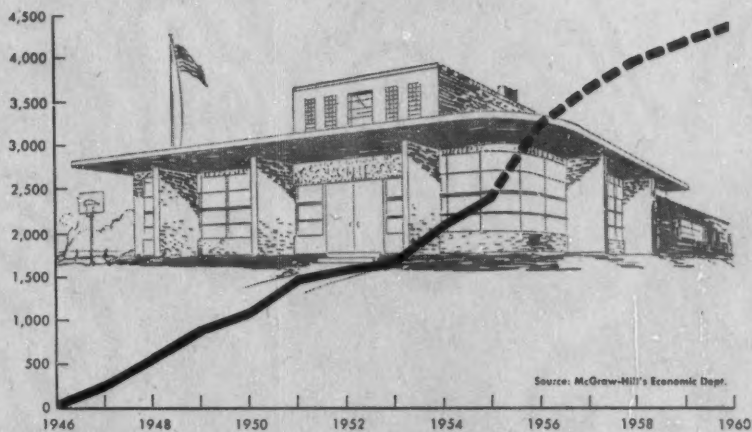
**F**IRST-GLANCE fears that one company might sew up too big a share of the synthetic rubber market now seem likely to prove unwarranted.

Sale of the big GR-S plant at Institute,

W. Va., would give high-bidder Goodrich-Gulf 24.2% of total present capacity. However, current expansion plans by other producers would shove the Goodrich-Gulf portion down to 19.8%.

## MORE SCHOOLS: GROWING MARKET FOR CHEMICALS

**Public School Construction Spending**  
(in millions of dollars)



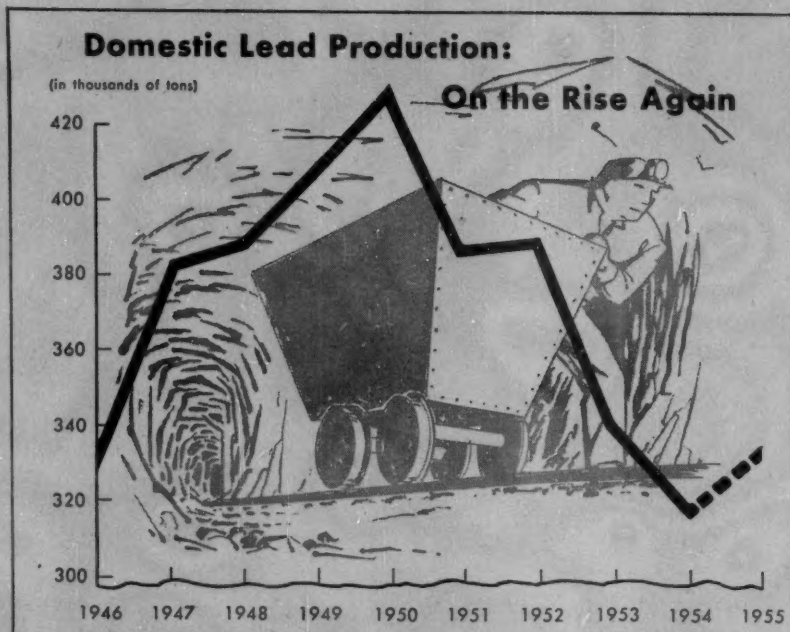
**I**NCREASING awareness of the nation's educational needs—highlighted by current proposals before Congress for a 5-year total of \$1.2 billion or more in federal aid for new public school con-

struction—promises a broadening market for a number of chemical commodities. Examples: paints and varnishes, plastic floor coverings, aluminum window frames, chemical fire extinguishers.



## Charting Business

(Continued)

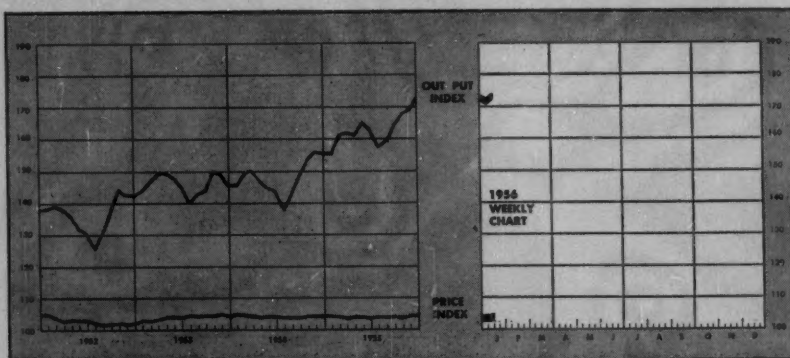


**L**ESS LEAD from domestic suppliers, more from abroad, that's the outlook for paintmakers and other chemical concerns using this metal, provided there's no abrupt change in tariff rates.

Meanwhile total demand for lead is rising, may double within 20 years.

While white lead has lost out to titanium pigments, red lead has kept its old pre-eminence for ship's painting. Too, lead is heavily used in high-compression engines. Finally, nuclear energy will claim growing amounts of lead for its radiation products, which require heavy sheathing.

### BUSINESS INDICATORS



#### WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100) .....	177.5	175.0	159.2
Chemical Week Wholesale Price Index (1947=100) .....	105.1	105.5	104.4
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.) .....	461.3	463.8	354.9

#### MONTHLY — Production (Index 1947-49=100)

	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining .....	141	146	128
All Chemical Products .....	176	178	156
Industrial Chemicals .....	195	197	166

# how Triangle Brand Copper Sulphate



**TRIANGLE BRAND**



## AGRICULTURE

as an active ingredient of Bordeaux Mixture sprays and dusts for the control of plant diseases and as an ingredient in fertilizers for copper deficient soil.



## WATER WORKS

as an algicide to clarify water, and to eliminate root and fungus growths in sanitary sewers and storm drains.

## WOOD PRESERVING

Triangle Brand Copper Sulphate is a superior wood preservative. Inexpensive—long-lasting. Prevents decay and termite damage.



## PLATING

as an electrolyte for copper-plating and for coloring metals.



## MINING

as a flotation reagent in the treatment of lead and zinc ores.

## PETROLEUM

as a reagent for the oil sweetening process, and as a catalyst in the production of high-octane gasoline.



## CHEMICAL MANUFACTURING

as a raw material used in making chemical and other copper compounds.

## PIGMENT MANUFACTURING

as a starting material for making green and blue pigments, such as Brunswick Green, Scheele's Green, etc.



## TEXTILE

as a mordant in textile dyeing and calico printing.

## BASIC COPPER SULPHATE

- NICKEL SULPHATE
- SELENIUM
- TELLURIUM



We will be glad to send you detailed information on the use of Triangle Brand Copper Sulphate in its various applications.

## PHELPS DODGE REFINING CORPORATION

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HOUSTON'S QUEBEDEAUX: In 54-defendant lawsuit, he . . .

## Spurs Pollution Control

You can figure that air pollution control agencies in every chemical industry community in the U.S. and Canada are keeping a fascinated eye on the big civil suit in Texas' 152nd judicial district court at Houston, where defendant companies are rapidly adopting—on their own initiative—abatement programs costing millions of dollars.

Whether the Houston approach—in which all probable contributors to a particular smog situation are brought into court together—would be effective in other communities is an open question.

But the rate at which companies with plants along the Houston Ship Channel have been coming to terms with local officials is sure to make authorities in other parts of the country wonder if this isn't the right way to tackle their own air pollution problems.

**Data Undisputed:** At Houston, a relatively large number of oil, chemical and petrochemical plants are clustered together in a relatively small area along the ship channel, and there are undisputed figures—running back to 1952—on exact quantities of hy-

drogen sulfide, chlorine and other contaminants in the air. No one plant could be blamed for all the pollution, but it was obvious that collectively they all shared the responsibility.

Harris County Attorney Burke Holman took this fact into account in a novel move in his suit for an injunction against Consolidated Chemical Industries. First, he got District Judge John Snell to assign the case to be heard by a special master in chancery who would have authority to recommend that other companies also be included in the hearing. Next, Holman got the master in chancery—former district judge W. Sears McGee—to accept an amended petition that listed Consolidated and 53 neighboring concerns as defendants, thus taking into court a substantial slice of the entire ship channel industrial complex (*CW*, Nov. 26, '55, p. 48).

McGee also was equipped with authority to recommend whether an injunction should be issued against any defendant or whether charges should be dropped; and this may have been a factor in some company attitudes. At any rate, the defendant companies have been sending their attor-

neys into court and announcing adoption of abatement programs approved by W. A. Quebedeaux, director of the county health department's Stream and Air Pollution Control Unit.

**Tentative Triumph:** So far, 20 companies (*see box*, p. 24) have given notice that they're going ahead with pollution abatement projects that—in some instances—will cost several million dollars. Tentatively, this represents at least a partial victory for Quebedeaux, who previously had encountered considerable difficulty in getting the companies to accept his recommendations either through informal discussions or through court action.

Quebedeaux—who not so long ago was in hot water with the county's board of commissioners because of interagency friction and lack of progress—is now jubilant.

"Since the beginning of the suit," Quebedeaux tells *CW*, "numerous companies have changed their policies and are now actively pressing air pollution abatement plans. This about-face of industry thinking has made itself felt materially in the area, and it is entirely possible that the situation will be cleaned up by industry on its own initiative in cooperation with our unit."

**Movement in Mass:** So many of the defendant companies have been pronouncing themselves ready to spend money on abatement equipment that the hearing had to be recessed for a while last month to give Quebedeaux time to visit the plants and look at proposed blueprints. The fact that some of the larger plants are not listed as having been cleared along with the first 20 firms, Quebedeaux explains, "is entirely due to my lack of time to completely examine their proposed programs."

In some instances, those plans represent vast expenditures in terms of time and talent as well as cost of equipment and installation. At Phillips Chemical, for example, corrective measures have been taken at four units of the plant; and in the ammonium sulfate unit, the cyclone precipitators to remove the dust cost about 23% as much as the production facilities. Other equipment installed by Phillips: scrubbing and cooling apparatus in the methylvinylpyridine unit, so that all pyridines are con-



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*Case History No. 13-51 . . . A large manufacturer of metallic stearates received an inquiry for a substantial quantity of cosmetic-grade zinc stearate. One of the stipulations was that this stearate be made from Emersol 132 Lily and that no other stearic acid could be substituted. It was apparent that this cosmetic-manufacturer had enjoyed the greater sales-appeal of light color, excellent color and oxidation stability, and outstanding resistance to rancidity inherent in his other cosmetics and toiletries when made with Emersol 132 Lily.*

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densed and captured; two sets of scrubbers in the ammonia unit to keep carbon monoxide and anhydrous ammonia from being emitted; and a complicated scrubbing system, several cyclone precipitators and a bag filter in the triple superphosphate unit.

In its hydrogen fluoride unit, Nyotex Chemical has put into operation two water scrubbers (\$8,000 each) to remove tail gases; and the company plans to install a purification system (\$150,000 to \$175,000) that will not only decrease the load on the scrubbers but also increase the product yield.

Champion Paper & Fibre—which has installed an imposing amount of pollution control equipment in the past—has let contracts totaling \$3 million for a chemical recovery furnace and for an electrostatic precipitator that's expected to be the largest ever designed for a paper mill. They're scheduled to go into operation in 1957. Ordered for earlier delivery: an improved blowdown condenser (\$175,000) and an additional lime stack scrubber (\$70,000).

For chemical process management elsewhere, what's happening at Houston may be a preview of things to come in other cities—particularly if smog ingredients are identified as chemical waste products, and if the plants under suspicion are closely bunched.

### IN THE CLEAR

(Chemical process companies whose air pollution control programs have been approved in Houston lawsuit)

Champion Paper & Fibre  
Chipman Chemical  
Crown Central  
Petroleum  
Diamond Alkali  
Drumex, Inc.  
J. H. Huber  
Index Chemical  
Marco Chemical  
Merichem, Inc.  
Natural Gas Odorizing Co.  
Nyotex Chemical  
Petro-Tex Chemical  
Phillips Chemical  
Processors, Inc.  
Richmond Tank Car  
Rohm & Haas  
San Jacinto Chemical  
Sinclair Refining  
A. O. Smith Corp.  
Standard Concrete



INDUCTEES: Critical jobs are key to the question . . .

## How Long in the Service?

**Hard-pressed personnel administrators trying to keep their scientific work-forces intact are showing relief this week over a new government listing that puts chemists and chemical engineers in the "special preference" category in the military reserve program.**

Under one government regulation announced last week and another one expected shortly, chemists, chemical engineers, foremen, design engineers, microbiologists, draftsmen and others in the chemical industries can:

- Discharge their military obligations by enlisting in the armed services for only six months' active duty. Under regular induction, they would be subject to two years' active service.
- Be screened out of the Ready Reserve into the Stand-by Reserve. This means they do not have to take part in compulsory reserve training drills after completing active duty, will be less liable to recall in case of a national emergency.

The idea behind the six months' training program for young men with critical occupations is to allow them to discharge military obligations with the least impact on their own careers and on essential industries that employ them.

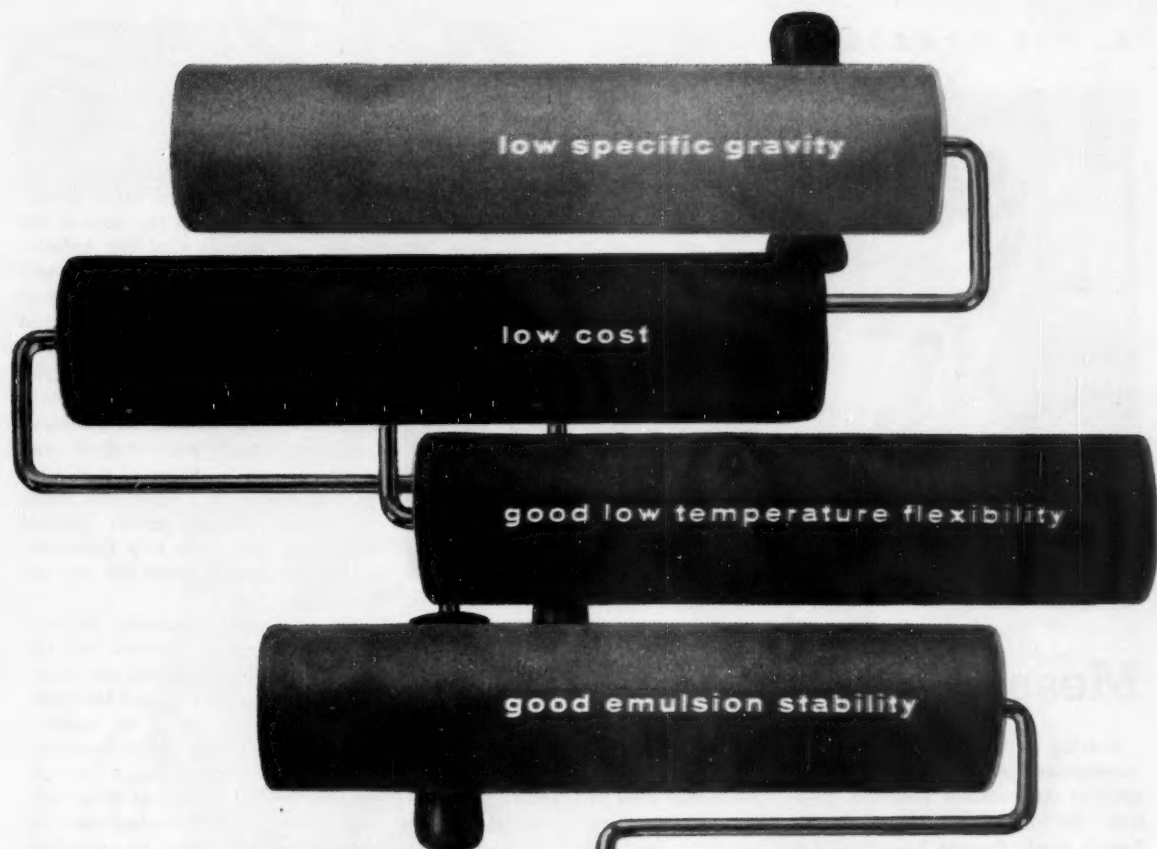
**Qualifications:** To qualify for the

special enlistment, the personnel must be employed in the production of defense-related chemical products—like guided missile propellants, high-temperature resins used in aircraft, and other weapons—or in vital research and development projects.

On Ready Reserve screening, critical personnel do not have to be employed in defense-related work. A chemist, for example, employed by a cosmetics manufacturer is just as eligible to be transferred out of the Ready Reserve as one engaged in guided missile work.

**The Hitch in It:** There's one hitch in the new policy, however: only Ready Reservists with skills considered "in excess of military requirements" will be screened out. This means a chemist assigned to a reserve chemical warfare unit, for instance, would most likely be kept in the Ready Reserve. So would a chemical engineer trained as a jet aircraft pilot.

A system of priorities will be set up to govern the transfer of chemists, chemical engineers, and others with critical occupations from the Ready to the Stand-by Reserve. The Defense Dept. will give preference to combat veterans and to men with the least remaining obligated service in the Ready Reserve.



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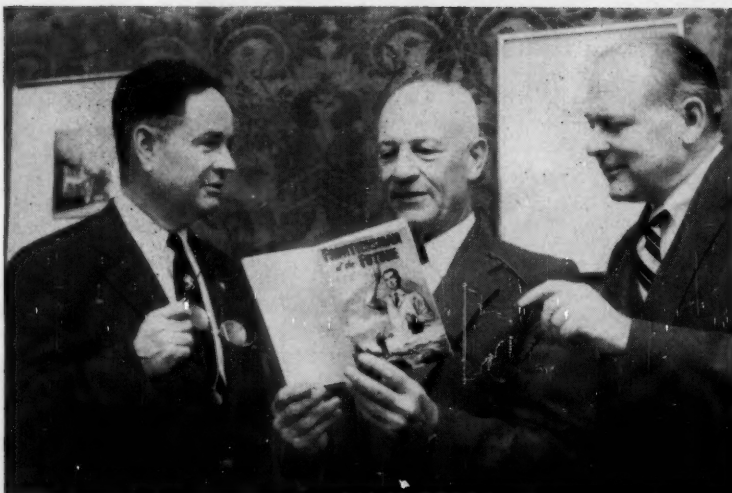
As a plasticizer for polyvinyl acetate emulsion paints, di-isobutyl phthalate assures excellent film durability and low temperature flexibility. Di-isobutyl phthalate is readily compatible with polyvinyl acetate and contributes to the stability of the emulsion.

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MCA FRONTIERSMEN\*: To get more scientists, carry the . . .

## Message to Tyros

Driving at what it—and chemical management generally—considers the heart of the technical education problem, the Manufacturing Chemists' Assn.'s newly formed Education Advisory Committee is kicking off its activities with publication of a new booklet aimed at junior-high and high-school youngsters.

Titled "Frontiersman of the Future," this booklet highlights for youngsters a vision of new horizons for pioneers in scientific research, shows them applications of chemistry in American living, gives indicators for determining science aptitude. To be distributed initially during Chemical Progress Week in April, it's indicative of the committee's basic approach to the problem of training scientists.

**What They're After:** The 15-man committee, headed by Bromwell Ault (Interchemical Corp.), with Glen Perry (Du Pont) as vice-chairman, has set three objectives, implementation of which is now getting under way. The objectives:

- To develop in school students appreciation of the role of chemistry in daily living.
- To interest them in chemical employment opportunities.
- To inspire science-talented students to follow scientific careers.

\*Looking over the committee's initial effort are Vice-Chairman Perry, MCA President Hull, and Chairman Ault.

To fulfill these goals, the committee, through regular MCA channels, will emphasize local participation by member companies, will supply them with programs and materials usable on community levels. In addition, the

group will devise experimental programs with a view to passing them on for industry use.

**Cuts Across Industry:** Formation of the advisory committee, MCA spokesmen say, arose from the need to cut across all segments of the industry interested in the technical-education question. These include public relations, personnel, education and scholarship grants-in-aid, and others.

Geared for specialized service, the new group aims at the specific educational function, expects its programs for approaching both students and teachers to get rolling in the latter part of this month. Then, companies in specially chosen school districts will set to work with help from education consultants hired for the job by MCA.

Of pilot-scale magnitude, the programs, as they are devised and put into effect, will be observed and evaluated in action. It's expected that sufficient results will be in to make a report at the June MCA board of directors meeting. Revision or expansion, to be considered then, may well prove to be new horizons for industry in its search for technical manpower.

### WHERE DO YOU FIT IN?

#### Opportunities in Chemicals

—drawn from "Frontiersman of the Future" for school-age youngsters' self-appraisal

FIELDS	Questioners	imaginative, curious, patient and creative persons can be found applying talents in basic research
	Problem-solvers	practical, inventive, consumer-minded people often enjoy working at applied or development research
	Helpers	reliable, accurate, painstaking employees frequently lend a hand as laboratory assistants or technicians
	Builders or Makers	capacity for hard work, knowledge of people, materials and machines, and vitality are attributes for production engineering
JOBS	Salesman	sympathetic, gregarious, well-spoken individuals are needed to act as link between company and customers
	Writer	good information interpreters, with talent for phrasing, fit well in writing reports, training booklets, other literary activities
	Fact-collector	good memory, reading aptitude are foundations for those who provide fact reference, locate information as librarians
	Advisor	knack of imparting information to others is among requirements for training, guidance, and industrial relations experts



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*(di-decyl phthalate)*

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## New Labor Express: 1 Union Dropped

A new labor union express train is being made up in Canada this winter—without a car for the United Mine Workers. Starting in April, it'll be running on a track parallel to the route of the AFL-CIO in the U.S.; and—just as in the case of AFL-CIO—chemical workers are prime prospective passengers.

More directly, the Canadian Labor Congress (CLC)—which is to be formed April 23 through merger of the Canadian Trades & Labor Congress (TLC) and the Canadian Congress of Labor (CCL)—will be putting special emphasis on organization of nonunion chemical workers north of the border. And to clear the tracks for this project, the CCL has cut loose a long-time member union, the United Mine Workers.

This means that so far as CCL is concerned, the Oil, Chemical & Atomic Workers (AFL-CIO-CCL) now has exclusive jurisdiction over unionizing of chemical and petrochemical workers in Canada. TLC, however, recognizes the International Chemical Workers Union (AFL-CIO-TLC) in that field; so after the TLC-CCL merger in April, OCAW and ICWU will—pending their possible merger in '57—continue to operate separately within their overlapping jurisdictions.

**Old Sore Spot:** Organizing chemical workers in Canada has long been complicated by CCL's persistent recognition of UMW's District 50 as having

jurisdiction in chemicals and allied industries.

CCL was formed about 16 years ago by merger of various CIO unions' new Canadian branches with some older Canadian unions that were not members of the TLC, which dates back to 1886. In general, AFL unions have been affiliated with TLC, CIO members with CCL. But regardless of how John L. Lewis led his United Mine Workers from CIO to independent status to AFL and back to independence, UMW's Canadian wing stayed in the CCL.

This was a major sore spot for the United Gas, Coke & Chemical Workers. Though a CIO member in good standing, this union always found the CCL door closed to it until it merged with the CIO Oil Workers last March. Now that CCL has uncoupled the UMW, OCAW says it proposes to go after Canadian chemical workers.

"This gives OCAW complete oil and chemical jurisdiction in Canada," the union tells *CW*. OCAW says its present district staff in Canada—headed by 34-year-old, chess-playing, ex-refinery worker Neil Reimer—will be expanded as organizing drives are projected.

Up to now, it's estimated that fewer than 50% of Canadian chemical workers are members of national or international unions. Whether the new CLC—to be led by Montreal's Claude Jodoin, now TLC president—

will be able to alter workers' thinking on unionization may depend on future ups and downs of the Canadian economy.

## LABOR . . . . .

**Longer Contracts:** The trend toward longer labor contracts at chemical plants is continuing so far this year. At Toledo, O., Barrett Division of Allied Chemical & Dye has signed a three-year contract with the United Auto Workers (AFL-CIO), covering 400 hourly paid employees. The agreement calls for a 3¢/hour wage rise retroactive to last March, to be followed by similar increases—called "annual improvement factors"—this year and next.

And at Tuscaloosa, Ala., Reichhold Chemical and the International Chemical Workers Union (AFL-CIO) have signed a three-year pact giving employees wage hikes averaging 12¢/hour plus certain fringe benefits. The contract provides for one reopener—for wage negotiations only—during each year of the agreement.

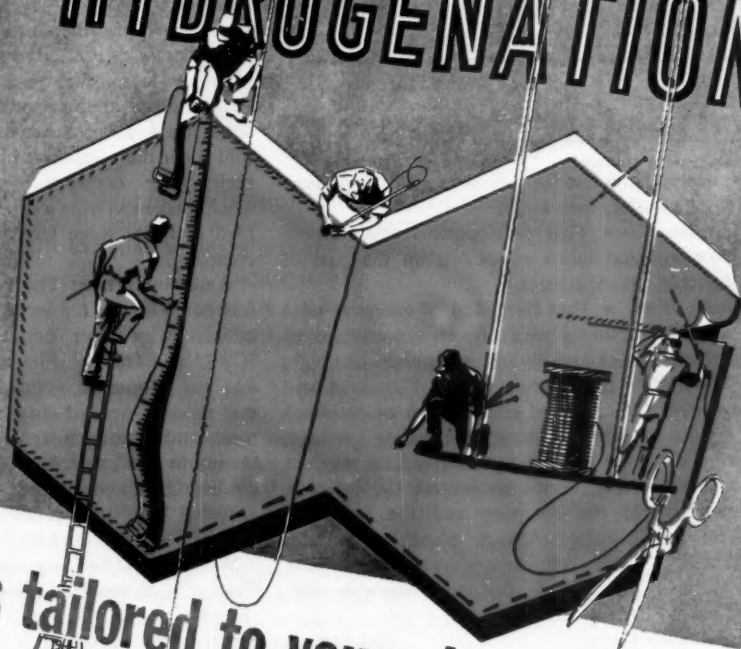
**Following Suit:** Spencer Chemical is the first of the other chemical employers in the Orange (Texas) vicinity to follow Du Pont's lead in raising employee wages this year. After Du Pont hoisted wage rates by 4% at its Sabine River Works (*CW Business Newsletter*, Jan. 14), Spencer came through with a similar increase—retroactive to Jan. 1.

Du Pont's wage boost—the third at that plant since 1954—puts the top scale for chemical operators there up to \$2.96/hour.

**Arbitration Not Final:** International Nickel Co. says it will ask the Ontario Supreme Court to nullify an arbitration board's decision that the company should reinstate an employee who was dropped from the payroll after a 30-day jail sentence for "impaired driving." Inco argues that the man's absence from work amounted to a "quit" under the collective bargaining agreement in effect, which states that a 14-day absence without leave can be regarded as a quit. The union at Inco's Port Colborne plant—International Union of Mine, Mill & Smelter Workers (Ind.)—says the attempt to upset an arbitration ruling is "unprecedented" in Canada.



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### STEPS TOWARD UNIFIED BARGAINING

- 1 ICWU locals negotiate a multiplant contract with Lever Brothers (coming up for renegotiation this month).
- 2 Three locals—one ICWU, one independent, one OCAW—conduct joint strike against Colgate-Palmolive; more recently, these locals bargained jointly for a new agreement that includes first layoff pay provisions in chemical industry.
- 3 Eight ICWU locals stage overlapping strikes against Florida phosphate producers.
- 4 OCAW decides to set up company councils and subindustry councils, and ICWU decides to intensify its work along this line.
- 5 ICWU, OCAW and IUE locals negotiate 14-plant agreement with Monsanto on pension and insurance plans.
- 6 OCAW locals negotiate 3-plant wage and union-shop agreement with Merck.
- 7 ICWU and OCAW set up joint committee to seek new pension pact with American Cyanamid.

## Seeking Collective Security

Chemical labor unions this winter are moving faster than ever before in their redoubled efforts to put bargaining on a company-wide basis wherever possible. Latest step in this campaign:

At American Cyanamid plants, 13 locals of International Chemical Workers Union (AFL-CIO) and 9 Oil, Chemical & Atomic Workers locals have set up a joint American Cyanamid policy committee (consisting of two members from each local) and a steering committee (six delegates from ICWU, four from OCAW) to coordinate bargaining for the 22 affiliated locals. (Not represented in this unit: employees at three other Cyanamid plants who are members of District 50, United Mine Workers.)

The new group—formed in Newark, N.J., last fortnight (see cut, right)—has discussed joint mutual bargaining goals and has come to an agreement on changes its members would like to see made in Cyanamid's present pension and insurance plans. It's now up to the steering committee—guided by Vice-Presidents Joseph Donovan, of the ICWU, and Joseph Appelbaum, of OCAW, and ICWU Research Director Otto Pragan—to figure out how to proceed with this program.

**Pace Alarms Some:** Some union officials are hoping that the pace at which both unions are marching along in this direction won't turn out to be

too fast for their own good. In particular, they hope:

- That developments won't arouse too much opposition on the part of management.
- That formation of company-wide councils won't boost expectations of rank-and-file union members too high.

In general, chemical management has favored continuation of plant-by-plant bargaining; the feeling has been that the one-plant-at-a-time method better serves to protect the interests of the company and the economic stability of each plant community. Union officials are trying to convince management that company-wide bar-

gaining would actually be better for management as well as for labor.

**Enthusiasm High:** Among a growing number of members of both these chemical unions, enthusiasm and expectations for broader-based bargaining are on the rise. They look on the few recent instances in which coordinated bargaining has culminated in favorable contracts (see box, left) as samples of bigger and better benefits to be won through similar tactics in the future.

It's easy to understand their reasoning. For one thing, they're aware of high-sounding terms attained by steel, auto and rubber unions in company-wide bargaining. And while chemical locals in low-pay communities obviously would like to be grouped with high-pay locals when new wage rate schedules are drafted, members of high-pay locals feel that such joint bargaining is in their interest too; in some cases, at least, management has told them the company couldn't grant their wage demands because that would make too wide a spread between high and low wage levels within the company.

**Ambitious Plans:** The new Cyanamid committee is the second company council with joint participation by ICWU and OCAW. First in the field was the Monsanto policy committee that recently worked out a new retirement and insurance agreement with Monsanto (*CW*, Jan. 28, p. 22). If the Cyanamid group succeeds in its endeavors, look for similar two-union committees to be launched soon.

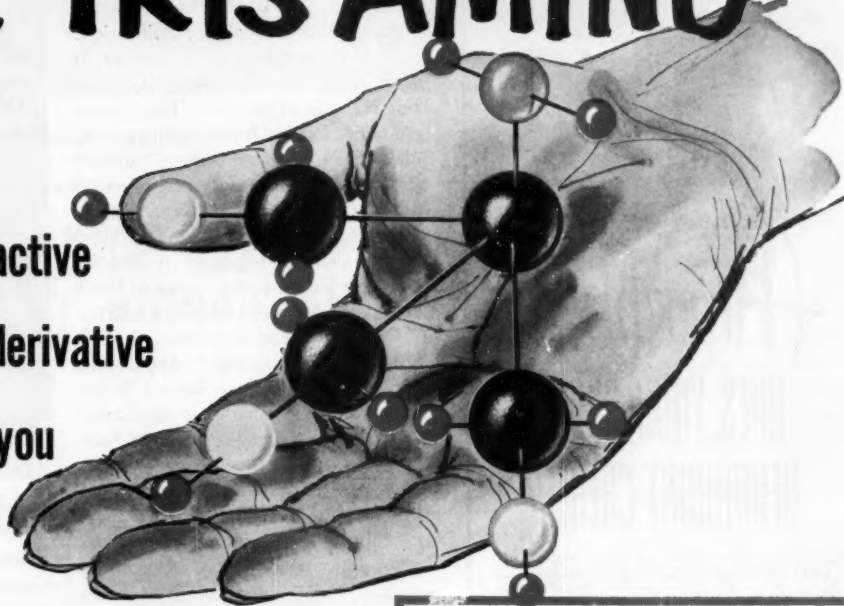
While ICWU had organized its own Cyanamid committee several years



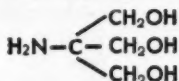
**PLOTTING JOINT TACTICS:** Committees from ex-rival chemical unions.

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Melting Point, °C	171-172
pH of 0.1M Aqueous Solution at 20°C	10.4
Solubility in Water at 20°C, g/100 ml	80

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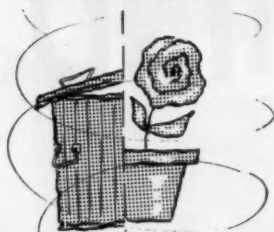
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## ADMINISTRATION . . . . .

ago, OCAW's Cyanamid council is only two days older than the joint committee, still has to be submitted to its constituent locals for ratification.

OCAW's Appelbaum is putting in much of his time these days on organizing councils of this kind. The Cyanamid council is his fourth achievement, following the setting up of similar units for OCAW locals at plants of Merck (including Sharp & Dohme), National Lead, and Union Carbide. He has also put together an alliance of Squibb locals, and is trying to build that group into a company council for all Olin Mathieson divisions.

"If we band together," Appelbaum tells his members, "we have a better chance of obtaining our economic objectives." So far, members of both unions seem to be willing to give this strategy a try, although they're a bit skittish about surrendering their "local autonomy." And several companies have agreed to bargain—on some issues, anyway—on a multiplant basis. The move is sprouting during a prosperous year; how it would bear up under adversity remains to be seen.

## LEGAL . . . . .

**Trademark Trio:** The Minnesota Mining-Minnesota Paint controversy moved along with an opinion from the U.S. Court of Customs and Patent Appeals last week. The opinion:

- Affirmed the decision of the Patent Office sustaining 3M's opposition to registration of MP's coated abrasives trademark.
- Affirmed the office's decision sustaining 3M's petition for cancellation of MP's trademark for certain paints and stains.
- Reversed the office's decision sustaining 3M's opposition to MP's trademark for ready-mixed paints, wood stains, and remanded the cause to the office for further consideration.

The new opinion follows petitions of both parties for reconsideration of a previous opinion handed down in mid-1955.

**Still Under Fire:** Long-drawn-out antitrust proceedings aren't slackening any, as evidenced by the U.S. Justice Dept.'s request last week to maintain antitrust proceedings against the Aluminum Company of America for another five years. The department has been maintaining proceedings against



**ALCOA'S WILSON:** Unhappily, his firm remains a ward of the court.

Alcoa for 19 years, was denied a petition charging monopoly in 1951, but was granted a continuance of five years. This was renewed last week, to the expressed surprise of Alcoa President I. W. Wilson, who said, "To continue to force Alcoa to remain a ward of the courts can serve no purpose . . . in a period in which aluminum is experiencing its greatest acceptance and is striving for unfettered expansion to meet the demand."

**No Evidence:** Difficulty of establishing individual liability when various companies are involved is seen in the latest move in the civil suits in connection with Cleveland's 1953 sewer explosions. Local judges have signed dismissal entries, killing the claims against Glidden Paint Co. Glidden officials would listen to no proposition for an out-of-court settlement on any basis for these cases, and 78 personal injury and property damage suits amounting to more than \$2 million were withdrawn by plaintiffs.

**Recovery with Restraint:** The question of recovering license fees in spite of misusing patents to restrain trade may be answered when the U.S. Supreme Court reviews a suit by U.S. Gypsum. The court has agreed to review the company's suit to recover licensing fees from four competitors who used the company's patents for three years before a 1951 decree con-



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## chem-memos

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Soya Oil . . . . .	372
Phthalic Anhydride . . . .	401
SORBITOL (Dry Basis) . . .	149
Glycerol (Dry Basis) . . .	149
Litharge . . . . .	0.8
Total . . . . .	1072
Yield . . . . .	1000

PROCEDURE: (1) Take all oil and glycerol to 235-240° C. and hold ¼ hour. (2) Add SORBITOL and phthalic anhydride. (3) Gain 220° C. and hold about 3 hours for acid number and viscosity.

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Write for the booklet, "Sorbitol Resins," which gives formulas, cooking procedures and characteristics of several sorbitol-based alkyds and rosin esters.



### Two New Glycerol Monostearate Emulsifiers

Atlas is now offering cosmetic chemists two new ARLACEL® glycerol monostearate emulsifiers (non-self-emulsifying) . . . for evaluation in creams, lotions, lipstick, shampoos, and hairdressings. They are manufactured in the new Atlas plant at Memphis . . . the world's largest facility for producing monoglycerides. Processed under latest quality control techniques, these emulsifiers offer exceptionally high standards of purity and uniformity to meet the most exacting demands of the cosmetic and pharmaceutical industry.

ARLACEL 161 has a monoester content of 40 to 44%. ARLACEL 169 is a special grade with 61-66% monoester content, unique in this industry. It offers opportunities for imparting new effects.

Write to Atlas for technical data and samples for test.

### Renex® 20 compounds for spot removal in laundering

The removal of heavy soil from collars, cuffs, and other areas has long been a problem in laundering. Even though these areas may look reasonably clean when the garment has been washed only a few times, the soil "builds up" after a series of washings until it is almost impossible to remove.

Joint research by Atlas and the Textile Fibers Department of E. I. du Pont de Nemours & Co. (Inc.) shows that Renex 20 synthetic organic detergent, made by Atlas, is an excellent "spotting agent" for use not only on fabrics of man-made fibers, but also on cotton. Applied to dry fabric, followed by normal washing, Renex 20 gave 3 to 4 times as much cleaning as a regular wash with a good "built detergent." It also gave about 3 times as much cleaning as with a toilet bar soap used in the same way. Repeated soiling and washing showed no "build up" of soil when Renex 20 was used for spotting.

The most effective method of applying the spotting agent is to place the fabric on soft backing, such as a towel, and then gently rub the agent into the soiled area with a hard edge, such as the edge of a spoon handle.

Renex 20 (polyoxyethylene derivative of mixed fatty and resin acids) is offered to specialty manufacturers for compounding and packaging in tubes, spray containers, or squeeze bottles. Guide formulas, as well as comparative tests of Renex 20 with other materials are shown in the paper "Spotting Agents for Washable Fabrics," by Dr. H. E. Stanley of du Pont, and M. E. Davis, of Atlas, available from Atlas on request (reprinted from presentation at December 1955 meeting of the Chemical Specialties Manufacturers Association). A technical bulletin on Renex 20 and trial samples are also available.

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Soda Ash

ACETAMIDE

Phenol

Alum

CALCIUM  
CARBONATE

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ACID

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Acid

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(IRISH MOSS)

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INHIBITORS

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Acid

Talc

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Waxes

Vanillin

RESINS

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ACID

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Citric  
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## ADMINISTRATION .

firmed that U.S. Gypsum had used patent licensing agreements to illegally restrain competition. The company expects to recover \$2,470,000 from the firms.

## KEY CHANGES. . .

**Earl F. Cline**, to director and vice-president, and **Hartl W. Lucks**, to vice-president, Smith Agricultural Chemical Co. (Columbus, O.).

**Rex L. Nicholson**, to president, Liquid Carbonic Corp. (Chicago).

**Thomas M. Lumly**, to director, Vitro Corp. of America (New York).

**T. E. Moffitt**, to executive vice-president, and **R. W. Hooker**, to senior vice-president, Hooker Electrochemical Co. (Niagara Falls, N.Y.).

**George L. Bond** and **E. S. Rothrock**, to vice-presidents and directors, Stauffer Chemical Co. (New York).

**J. Louis Reynolds**, to executive vice-president, Reynolds Metals Co. (Richmond, Va.).

**John E. Wood**, to general manager, Chemical Products Dept., Esso Standard Oil Co. (New York).

**R. H. Mulford**, to president, Kimble Glass Co. (Toledo).

**Robert A. Sandberg**, to manager, public relations, Kaiser Aluminum & Chemical Corp. (Oakland, Calif.).

**Francis C. Oakley**, to president, and **Leland P. Symmes**, to board chairman, Baker Extract Co. (Springfield, Mass.).

**L. Dudley George**, to vice-president; **William B. Badenoch, Jr.**, to secretary; and **Robert A. Bell**, to treasurer; Richmond Guano Co. (Richmond, Va.).

**Edwin C. Evans**, to director, and **Howard J. Daly**, to vice-president, Norton Co. (Worcester, Mass.).

## DIED . . . . .

**Charles J. Hardy**, former president and board chairman, American Car & Foundry Co. (New York), in New York.

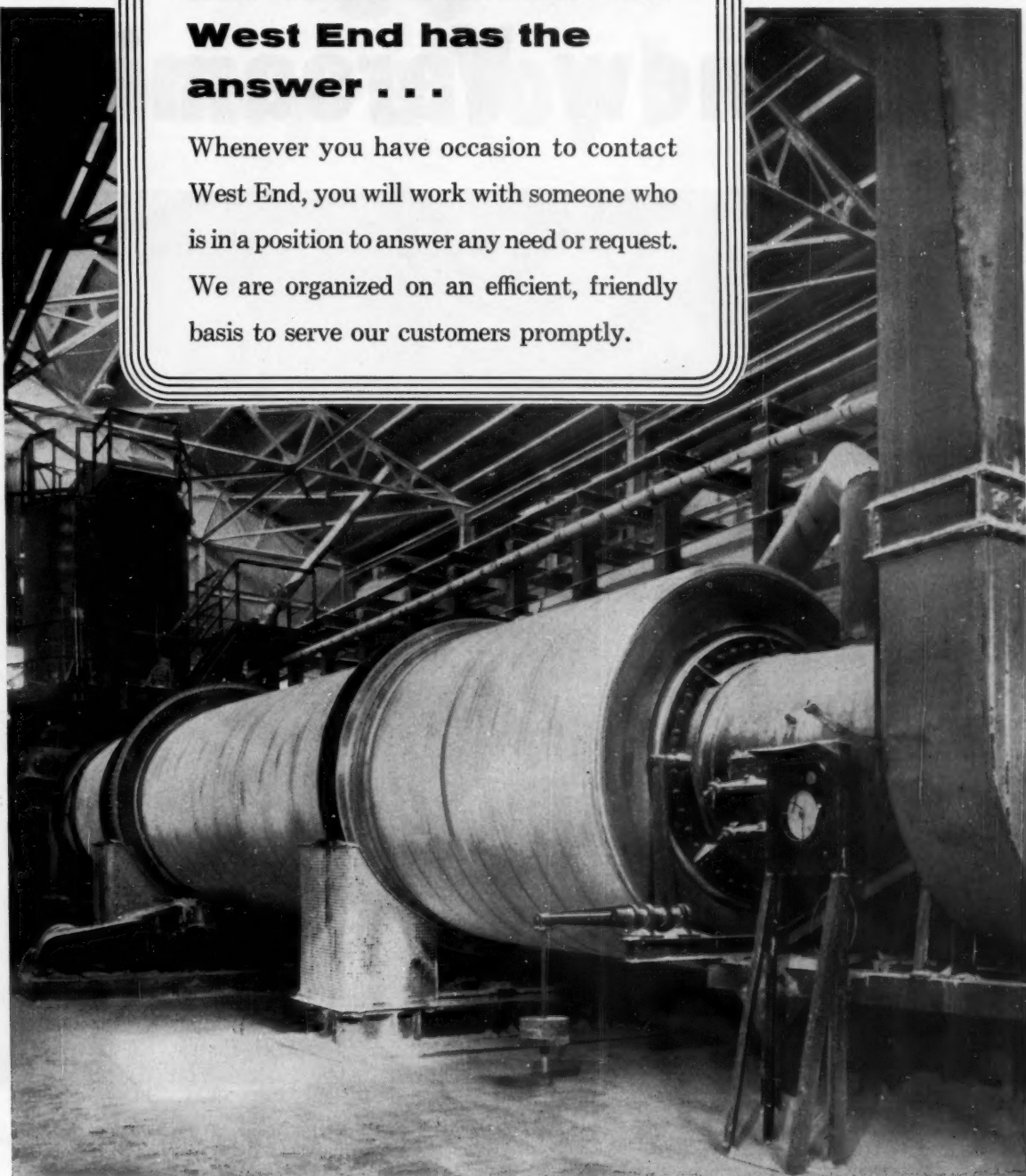
**Jack Thurman, Sr.**, owner, Peninsular Chemical Co. (Jacksonville, Fla.), at Jacksonville.

**Clifford Marvyn Stodghill, Sr.**, 66, founder, Stodghill & Co., textile chemicals (Atlanta), in Atlanta.



**the soda ash man at  
West End has the  
answer . . .**

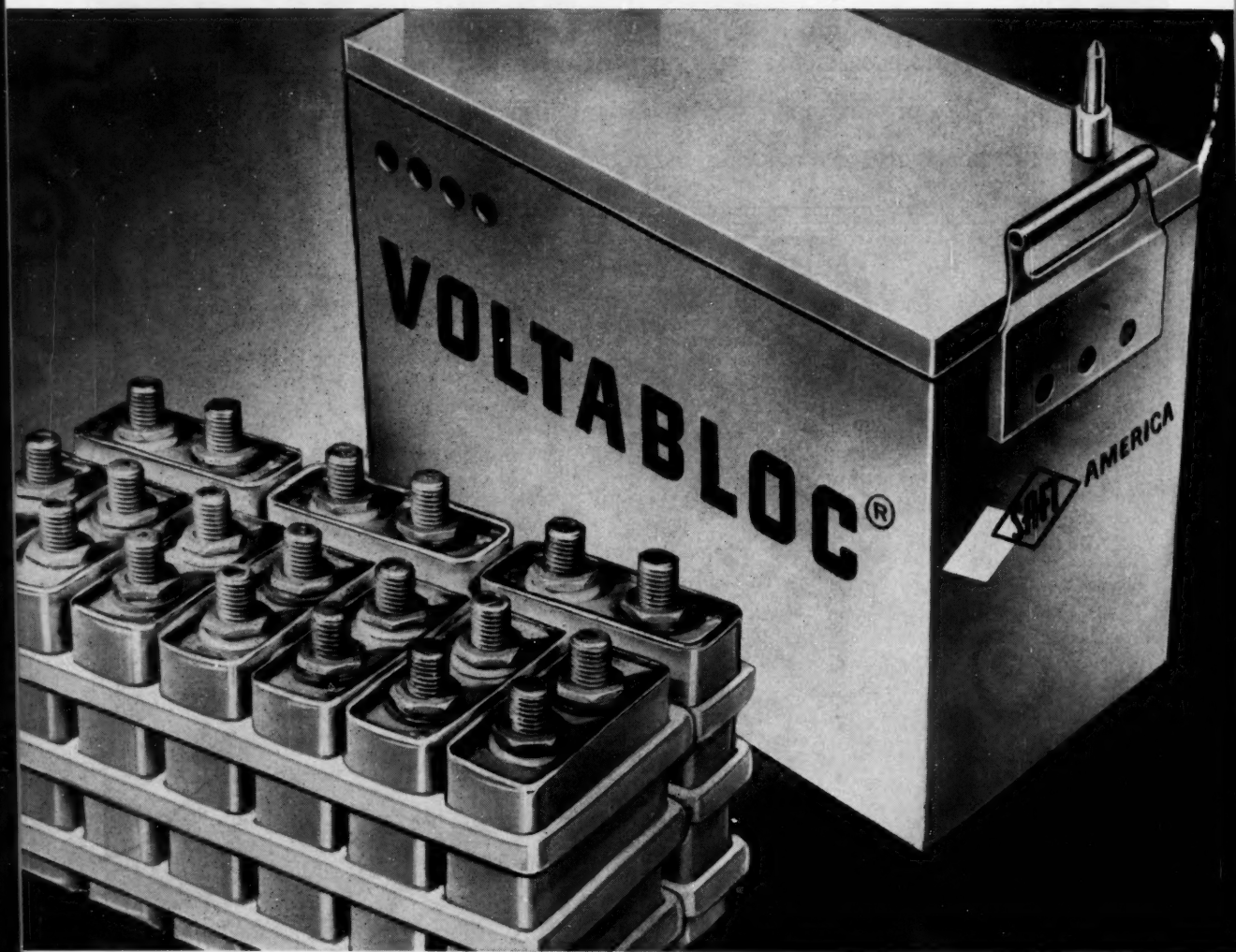
Whenever you have occasion to contact West End, you will work with someone who is in a position to answer any need or request. We are organized on an efficient, friendly basis to serve our customers promptly.



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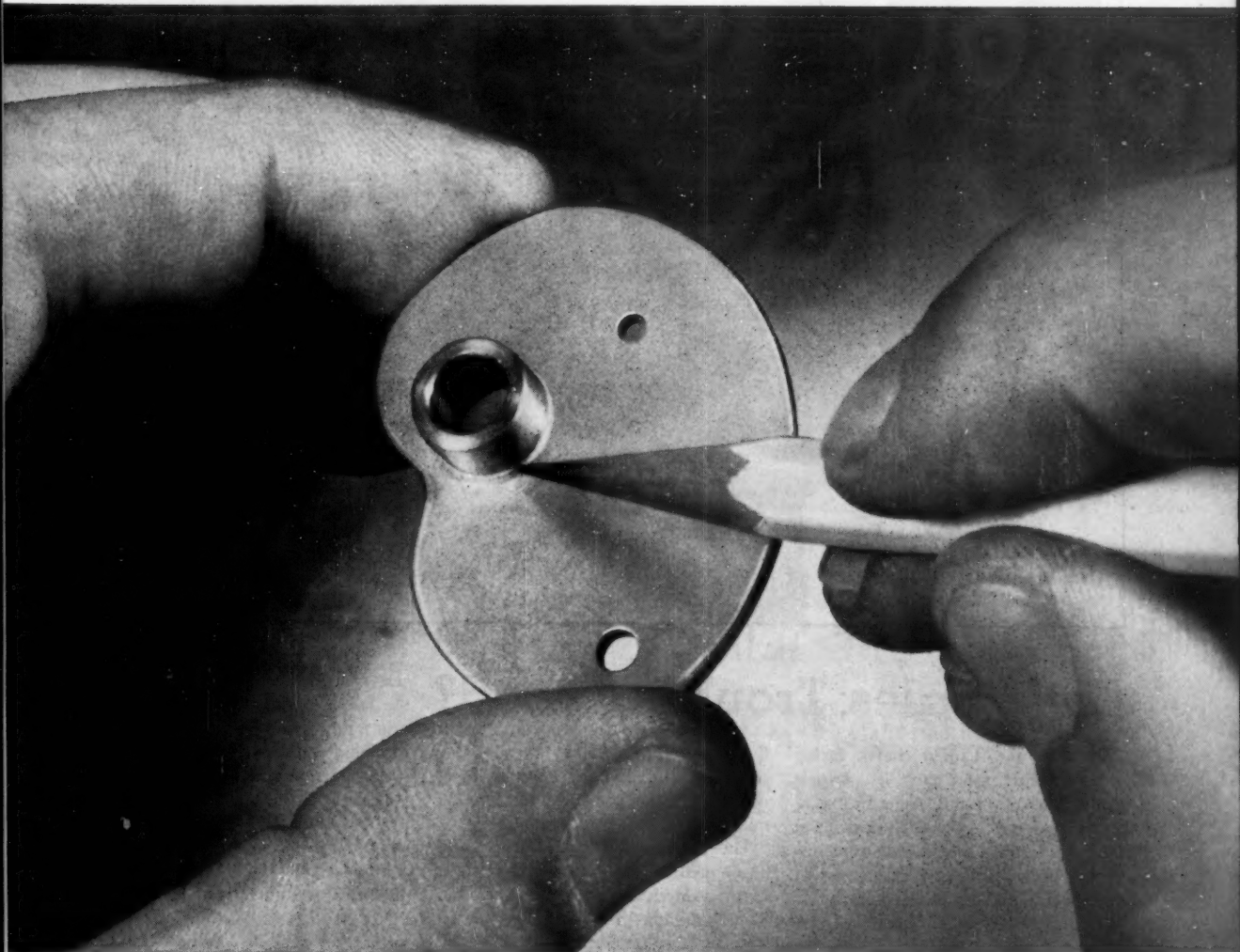
demands of SAFT Corp., maker of the Voltabloc battery. Versamids alloyed with epoxy resins provided a 100% solids material that cures at room temperature and has high tensile strength. With Versamids, Rubber and Asbestos Corp. gained a new account and SAFT was able to make a product that outlasts several ordinary batteries. See how General Mills "opportunity chemicals" can help *you*. Eventually . . . why not now?



Complete test data and a wealth of facts on Versamid-epoxy adhesives are available in General Mills new Technical Bulletin 11-F.

\* **Investigate Versamids...**  
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# **bonding jobs licked —epoxy alloy!**



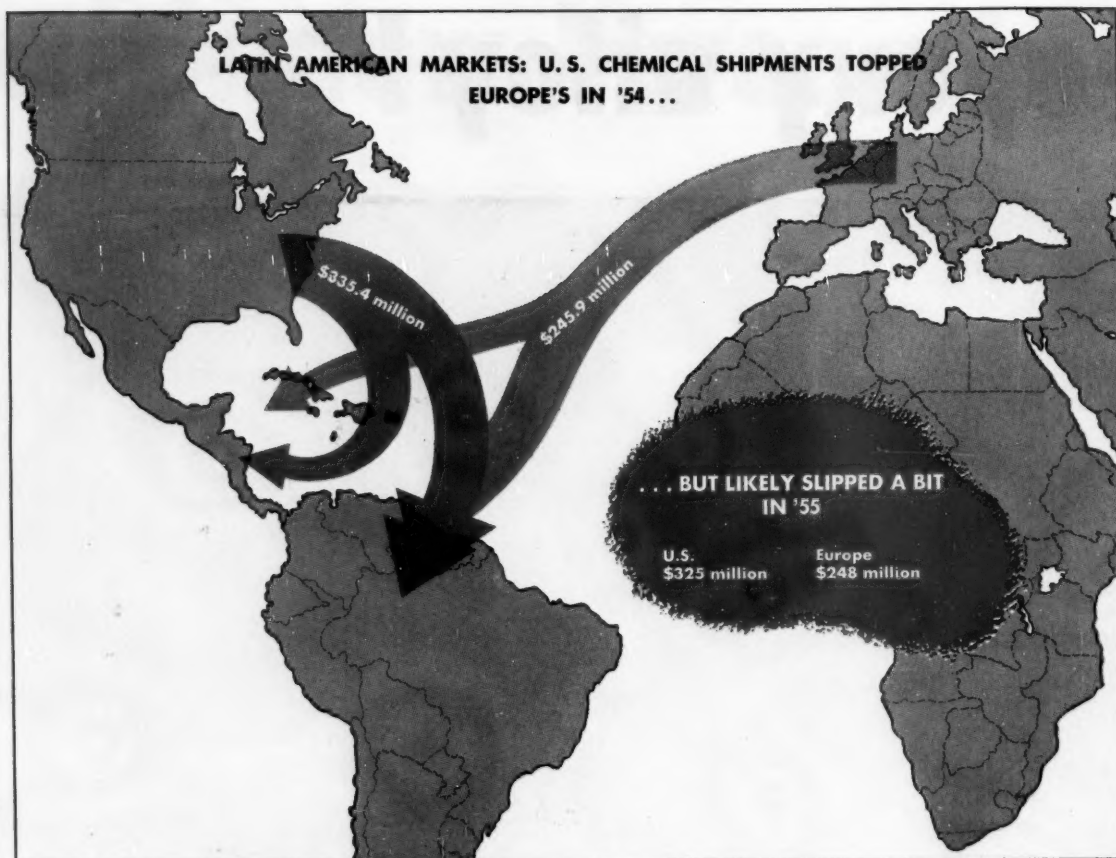
**Saved: 47¢ per cam,** by switching from soft solder to Versamid-epoxy adhesive for cam assemblies. With 89,600 cams in a contract, the Mechanical Division of General Mills saved \$42,112, cut scrap loss drastically for a bonus saving. And adhesive bonding made the product, a radio receiver, better and stronger! Such case histories prove Versamid-based adhesives almost incredibly tough and tenacious. They're replacing weld-

ing, sewing, soldering, riveting in a growing list of industries. They bond almost any like and unlike materials fast and for keeps, with contact pressure only. Perhaps you can use a superlative adhesive like this. We'll be glad to tell you how General Mills Versamids can help. (Please note that General Mills does *not* make adhesives . . . only the Versamid polyamide resins that make such superior adhesives possible.)

**CHEMICAL DIVISION of General Mills**  
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# DISTRIBUTION . . . . .



## Latin Sales: Trouble Ahead?

How is the United States faring in chemical sales to its largest export market, Latin America? Are resurging—and aggressive—European suppliers cutting into the lush, south-of-the-border outlet? The answers to these questions are inherent in some just-out United Nations statistics and CW has dug deep in these to come up with this conclusion: the U.S. is losing volume and percent-of-sales but is still leading in both categories.

Take these latest U. N. Chemical Commodity Trade Statistics\*, for example: during the first six months of '55, U.S. chemical sales to Latin America totaled \$164.1 million, compared with '54's \$167 million in the

first half. This indicates that total U.S. sales for all 1955 may have hit \$325 million vs. the previous year's \$335 million.

On the other hand, Europe will likely gain at least \$2 million over its Latin American chemical sales of \$245.9 million in 1954, tally out '55 at some \$248 million.

Percent-of-the-market calculations are even less encouraging. The U.S. slice of the market (first half of '55 vs. first half of '54) has dropped in five, gained in only three of the eight largest Chemical Standard International Trade Classifications. Group by group, here's how the U.S. and its competitors are making out (see boxes pp. 42 and 44).

**Inorganic Chemicals:** "Slump" is the word best describing U.S. sales in '55's first half. At \$16.6 million, U.S.

sales are \$5.7 million, or 26%, below the January-June period of '54. If this rate holds for all of '55, the U.S. will have captured 47.9% of the total. The 1953 figure was 51.0%.

Curiously, the United Kingdom and France—not West Germany—may wind up as '55's big winners, with a combined take of 29%. For all of '54, these two accounted for 21%.

January-June total sales of inorganics for '55 are \$3.4 million less than for the same period in '54—\$38.1 million.

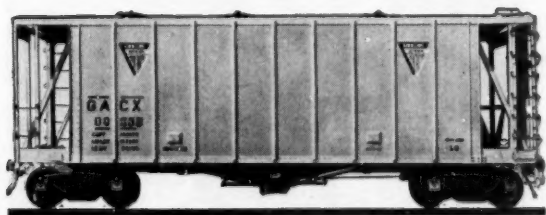
**Organic Chemicals:** Although whole-year U.S. sales projections don't forecast a '55 year as great as '53 or '54, the organics' category is nonetheless one of the brighter spots. U.S. share of the market for last year's first six months is only a shade off the comparable '54 period, and the figure suggests that the whole-year '54 record will be bettered by a few percentage points.

\*These figures do not include those of the nonreporting nations Spain, U.S.S.R. and the Soviet satellites. Switzerland, a nonreporting nation, is included in the all-chemical exports total and in classifications where its exports are significant.

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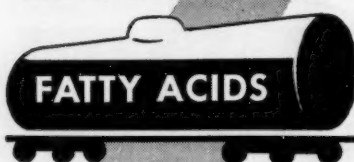
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February 4, 1956 • Chemical Week

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## DISTRIBUTION . . . . .

In contrast, the U.K.'s first-half showing (6.3%) indicates the country will have trouble reaching its overall '54 mark (13.0%) for all of '55. France and Italy seem headed for modest increases (6.4% vs. 4.1%, and 3.8% vs. 2.8%). West Germany will likely remain unchanged at 20% of the '55 market.

**Coal-Tar Dyes:** Total Latin Amer-

ican sales of all countries for last year may prove 34% less than '54's whopping \$37.8 million, but still, perhaps, \$5 million greater than '53's \$20.3 million.

As in all of 1954, Switzerland remained kingpin in January-June of '55, racked up, in both cases, better than 33% of all sales. Nearest challengers: the U.S. and West Germany.

	Sales (in millions of dollars)		Percent of Market	
	1954	1st half '55	1954	1st half '55
<b>Inorganic Chemicals:</b>				
U.S.	\$ 42.5	\$ 16.6	53.6	47.9
U. Kingdom	12.7	6.9	16.1	19.8
W. Germany	9.7	3.9	12.2	11.4
France	4.1	3.2	5.2	9.2
Italy	2.6	1.0	3.2	2.8
<b>Total</b>	<b>\$ 79.2</b>	<b>\$ 34.7</b>		
<b>Organic Chemicals:</b>				
U.S.	44.6	20.3	53.9	57.6
U. Kingdom	10.8	2.2	13.0	6.3
W. Germany	16.6	7.2	20.0	20.4
France	3.4	2.2	4.1	6.4
Italy	2.3	1.3	2.8	3.8
<b>Total</b>	<b>\$ 82.7</b>	<b>\$ 35.3</b>		
<b>Coal-Tar Dyes:</b>				
U.S.	6.8	2.3	17.9	19.0
U. Kingdom	3.1	1.1	8.2	9.6
W. Germany	8.9	2.4	23.4	19.6
France	3.9	0.9	10.3	7.7
Italy	1.6	0.7	4.2	5.7
Switzerland	12.7	4.0	33.6	33.2
<b>Total</b>	<b>\$ 37.8</b>	<b>\$ 12.0</b>		
<b>Drugs and Pharmaceuticals:</b>				
U.S.	109.4	49.0	69.2	65.1
U. Kingdom	8.5	3.5	5.4	4.7
W. Germany	9.6	4.6	6.1	6.1
Switzerland	18.0	12.5	11.4	16.6
France	3.3	1.7	2.1	2.3
Italy	4.4	1.9	2.8	2.6
<b>Total</b>	<b>\$ 157.8</b>	<b>\$ 75.3</b>		



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Natural Kraft	✓	
Colored Kraft	✓	
Bleached Kraft	✓	
Creped Kraft	✓	
Wax Laminated Kraft	✓	
Asphalt Laminated Kraft	✓	
Wet-Strength Kraft	✓	
Water Repellent Kraft	✓	
Stak-LOK Super Rough Kraft	✓	
Valve Bags—sewn or pasted	✓	
Open Mouth Bags—sewn or pasted	✓	
Flat Sewn Valve Bags	✓	
Flat Sewn Open Mouth Bags	✓	
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Creped Tape	✓	
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Art Department	✓	
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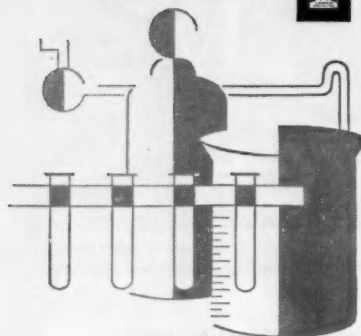
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**IRISH MOSS**—Used where highly soluble viscous mucilage is desired, such as cold water paint, shoe polish, leather and textile sizing. In natural, bleached or purified powder forms.

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**LOCUST BEAN GUM**—A thickening agent for: textile printing and finishing, for food and pharmaceutical products, toilet preparations and cosmetics. Swells in cold water to give an extremely viscous solution. Also known, in a prepared solution, as Luposol (digested and filtered with all specks, flakes and other foreign matter removed).

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## DISTRIBUTION . . . . .

On an extrapolated year basis, the Bonn Republic's sales have dropped again (20% for '55, down from 23% in '54 and 29% in '53). But U.S. sales are dropping, too. A 6-month comparison reveals '55 is 3.6 percentage points off the '54 pace of 22.6%.

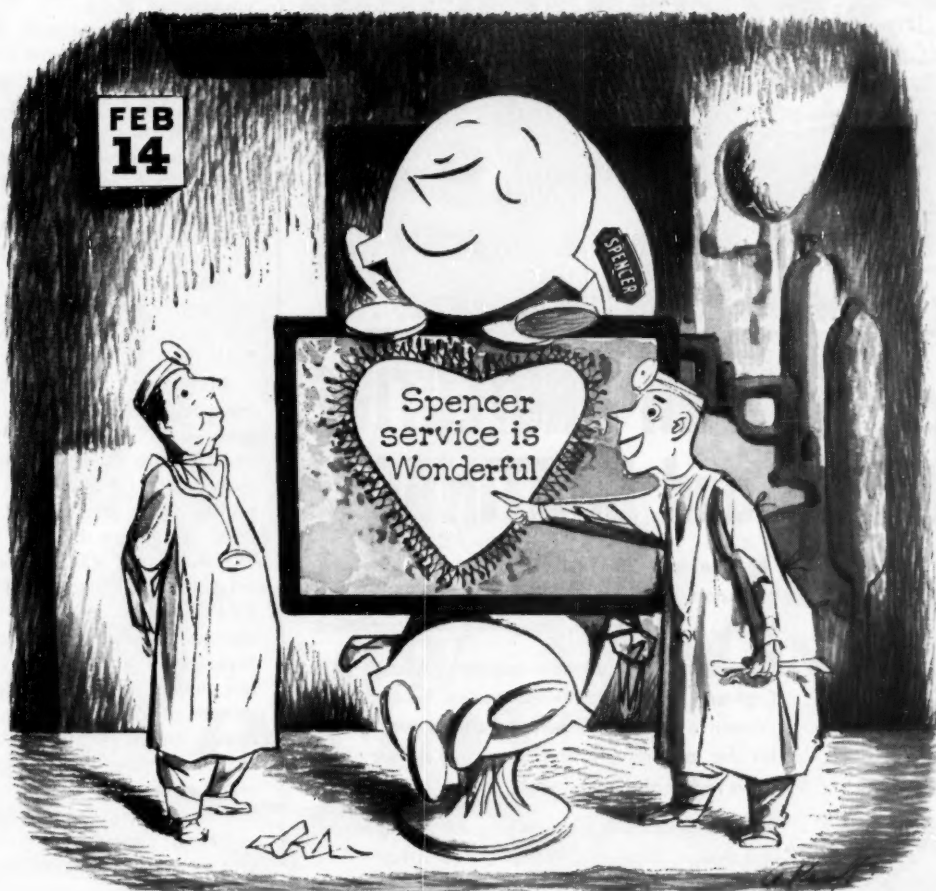
**Drugs and Pharmaceuticals:** This is the largest classification in volume, with reported '54 sales of \$158 mil-

lion. Estimates for '55 point to a lower figure, but still over \$150 million. Europe continues to gnaw at this tasty U.S. export market. From a 71.3% portion of the pie in '54's first six months, the U.S. slipped to 65.1% in '55's first half.

Switzerland appears to be moving up and—if its performance the first half of '55 holds for the final half—

	Sales (in millions of dollars)		Percent of Market	
	1954	1st half '55	1954	1st half '55
<b>Chemical Material Products:</b>				
U.S.	\$ 64.9	\$ 35.4	57.6	53.4
Canada	10.0	7.6	9.0	11.5
U. Kingdom	10.7	11.4	9.6	17.1
W. Germany	11.8	5.7	10.7	8.3
France	2.2	2.8	2.0	4.2
Netherlands	2.8	1.4	2.5	2.1
<b>Total</b>	<b>\$ 110.8</b>	<b>\$ 67.2</b>		
<b>Paints:</b>				
U.S.	27.2	13.0	73.0	76.6
U. Kingdom	4.1	1.7	10.9	9.8
W. Germany	2.3	0.8	6.6	4.7
Italy	0.8	0.3	2.1	1.7
Netherlands	0.9	0.3	2.4	1.7
<b>Total</b>	<b>\$ 37.2</b>	<b>\$ 17.0</b>		
<b>Soap and Cosmetics:</b>				
U.S.	13.9	7.2	57.6	62.0
U. Kingdom	6.0	2.3	25.0	20.1
W. Germany	1.2	0.3	5.1	2.9
France	1.5	1.0	6.1	8.7
Switzerland	—	0.6	—	5.2
<b>Total</b>	<b>\$ 24.0</b>	<b>\$ 11.7</b>		
<b>Fertilizers:</b>				
U.S.	17.1	13.0	44.4	52.9
U. Kingdom	2.8	1.2	7.3	4.9
W. Germany	9.2	4.2	24.0	17.0
France	4.8	2.1	12.5	8.6
Canada	0.6	1.2	1.5	4.9
Bel-Lux	3.8	2.5	9.8	10.2
<b>Total</b>	<b>\$ 38.5</b>	<b>\$ 24.4</b>		

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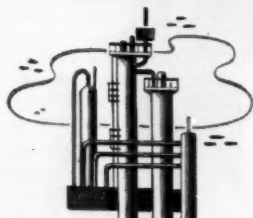
# CORROSION

of industrial  
equipment, materials

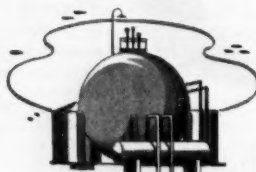
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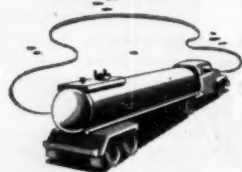
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### DISTRIBUTION...

will tick off 16.6% of the market. Indications are that little change will occur in market portions of other countries.

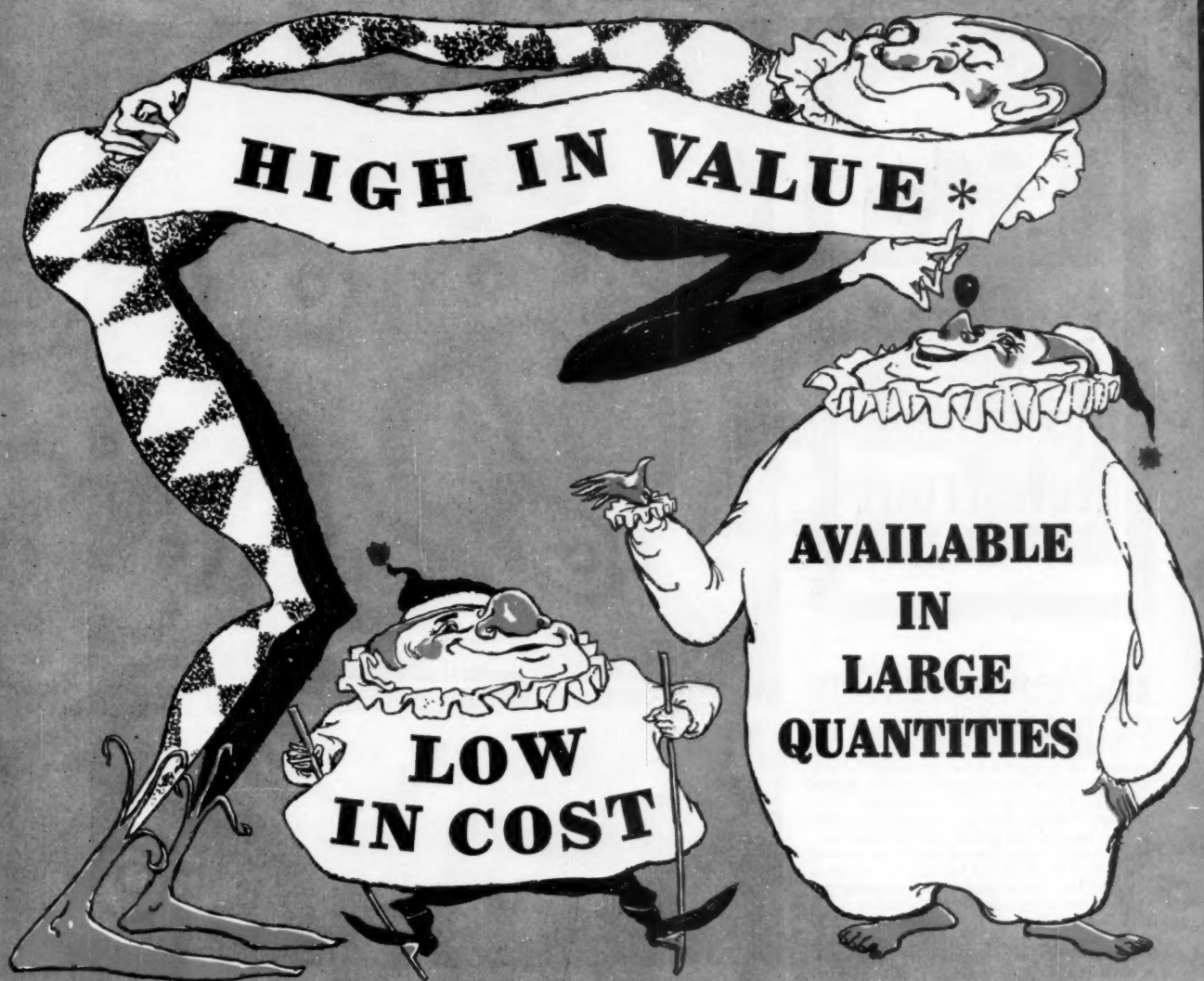
**Soap and Cosmetics:** Here, total sales (\$11.7 million) for January-June of 1955 have risen only slightly from the '54 counterpart (\$11.3 million). The U.S. cut of the '55 and '54 half-year grosses has climbed a few notches (to 62% from 58%). Figures for the first half of 1955's performance indicate that the U.K. is returning to its '53 level of 20% of the market; France and Switzerland seem well on the way to noticeable gains (9% and 5% of the market in '55, vs. 5% and 2.4% in '53).

**Fertilizers:** All signs point to a bumper '55 for the U.S. in fertilizer sales—both in terms of volume and market share. By extrapolation of first-half results, '55 should see some \$49 million worth of fertilizer sold, with 53% of it from the U.S. In '54, the U.S. sold 44% (\$17 million) of the market, even less in 1953—some 27.4% (\$7.6 million). Other key changes indicated: Canada could quadruple its '54 sales of 1.5% of the total, has already sold twice as much in six months of '55 as it did in all of '54. France, which plummeted from 18.1% of the whole in '53 to 12.5% in '54, seems ticketed for further loss. In '55's first six months, France snared 8.6%.

**Paints:** Changes are evident in this group, but they appear too small to forecast any major position-switching. Sales in '55 should approximate '54's \$37 million, be, at worst, a few million dollars less. The U.S. may gain a percentage point or two (first half of '55 vs. first half of '54 is 76.6% vs. 74.5%).

**Chemical Material Products—NES:** Into this rambling class fall plastics, insecticides, starches, gums, chemical machinery, and just about anything not classified in other groups. Sales of the entire category for '55 may well top \$135 million, exceed '54's \$111 million and '53's \$78 million. On a first-half basis, U.S. is slipping badly.

Results for '55 show the U.S. with 53.4% of the market vs. a '54 figure of 63.6%. The U.K. is chiefly responsible for the U.S. drop, having vended more between January and June of '55 than it did in all of 1954—it snipped out 17% of the market in the first half of '55. Canada and France, too, seem to be forging ahead.



# PICCOPALE



- ★ 100% petroleum polymer
- ★ Versatile, compatible, permanent
- ★ By the trainload, if you wish

The extremely low cost of PICCOPALE, and its availability in enormous quantities make this new type of petroleum resin ideal for use as a basic raw material. It is chemically inert—not affected by acids, and alkalies; moisture-proof; compatible; soluble in naphthas, chlorinated and other solvents. Available in liquid solution or in flaked or solid form.

WRITE for complete data, specifications and samples.

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District Sales Offices:

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(CW)

Clairton, Penna.

Please send me a copy of your bulletin describing PICCOPALE and samples of grade for (application)

Name \_\_\_\_\_ Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

# Life

## ...on the Chemical Newsfront

**NEW PROCESS KEEPS FOOD FRESH LONGER.** Years of research on the use of antibiotics to slow food spoilage now are paying off. In the photograph (right), a solution of **ACRONIZE®** chlortetracycline (based on a special food grade of **AUREOMYCIN®** chlortetracycline) is being added to chilling tanks in which processed chickens are cooled. Only 2.6 ounces in a 200-gallon tank slows growth of spoilage bacteria, lengthening poultry freshness several days. Test birds stored two and three times longer than the normal merchandising period under commercial refrigeration taste and look the same as fresh-killed fowl. Only trace amounts of the antibiotic are in the solution, and these diminish on aging, disappear entirely on cooking. This new process may soon be extended to fish and other meats to bring fresher food to your table. (Fine Chemicals Division) \*Trade-mark



**"FIRE-ENGINE RED"** is the familiar name for Cyanamid toluidine toners, the pigments that produce brilliant, clean shades of red. Highly resistant to weathering, they are used extensively in finishes for fire-fighting equipment, hydrants, farm implements, gas pumps, signs and other metal or wood surfaces exposed outdoors all year long. Because of high hiding power, these pigments cover well and go a long way in paint formulations. Offered in light, dark or medium shades, they are easy to disperse in typical paint formulations. (Pigments Division)





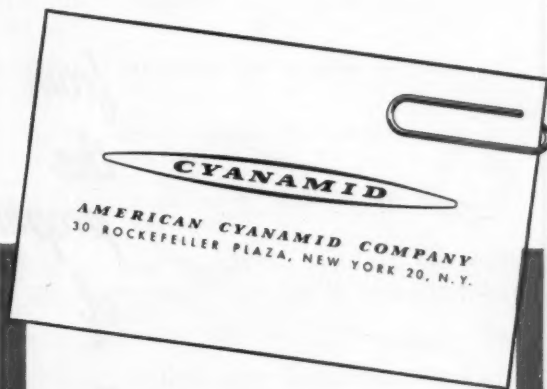
**A NEW CONCEPT IN INSECT CONTROL** is embodied in THIMET® Systemic Insecticide. The first systemic that can be applied effectively to seeds, it is absorbed by the growing plants and kills insects that feed on them for periods up to 7 weeks. Results of a typical field test on cotton are shown above: unprotected plants on the left have been stunted by early season insect attack; plants on the right were treated with THIMET Systemic Insecticide. As a result of such tests, THIMET will be marketed on an experimental basis to cotton seed dealers in Texas and Mississippi for treatment of seeds for this year's crop. (Agricultural Chemicals Division)



**MODERN TORTURE CHAMBER FOR DYES** is the family washing machine. High water temperatures, strong detergents, bleach and constant agitation soon separate color from fabric—unless dyes are truly fast. Best dyes chemistry has yet developed for cottons, washable rayons and linens are Vat Dyes. Chemically fixed in the fabric for its life, they take all the washing, exposure to sun, salt water, perspiration and rubbing the fabric itself can stand. Cyanamid Vat Dyes, of course, are only part of a full line of dyes used in textile, paper, leather, plastics and other products where color counts. (Organic Chemicals Division)

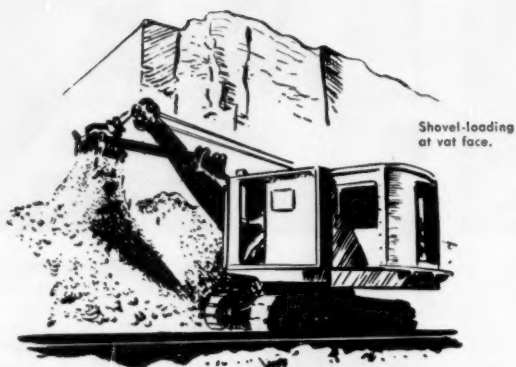


**LET'S GO PROSPECTING IN A MODERN WAY.** Our New Product Development Department does everything it can to help chemists prospect the commercial possibilities of new chemicals developed by our research laboratories. One such chemical is N,N'-METHYLENEBISACRYLAMIDE, a reactive, bi-functional monomer that undergoes reactions typical of activated double bonds or amide groups. It copolymerizes with other monomers in the presence of peroxide catalysts to yield cross-linked, insoluble resins. Another important property of N,N'-METHYLENEBISACRYLAMIDE is its ability to react with compounds containing active hydrogens. Similar applications of this monomer may lead to pay dirt in your particular field. If prospects look good to you, let us send you data and a sample. (New Product Development Department, Section C)



### *Building for the Future Through Chemistry*

*Additional information may be obtained regarding these products by writing on your business letterhead to the Division of American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y., indicated in the captions.*



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# CHEMICALS OUTLOOK

February, 1956



This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

## WYANDOTTE CUTS HALANE PRICES 20 PERCENT

The rapidly growing demand for Halane-based dry bleaches, in both the home and the commercial laundry fields, has made possible new production economies enabling us to announce a further reduction in Halane prices.

Therefore, effected January 15, 1956, Wyandotte Halane prices were reduced 10¢ per pound, in both carload and l.c.l. quantities.

This new, lower price schedule is expected to stimulate the use of Halane in many industrial fields.

## PLURONIC L62 ELIMINATES STARCH-CASEIN INCOMPATIBILITY IN PAPER COATINGS

The Pluronics\*—Wyandotte's unique series of 100%-active surface active agents—offer paper manufacturers better results in an increasing number of applications.

For example, Pluronic L62 is now in commercial use as a stabilizer for styrene-butadiene latices in paper coatings. Used as a latex stabilizer with starch adhesives, L62 replaces casein . . . and starch-casein incompatibility is eliminated. Used at a concentration of from 1% to 3%—based on the weight of the latex—Pluronic L62 offers the following advantages:

L62 is a liquid product which can be added directly to the emulsion through proportioning equipment . . . providing a simple means for handling.

The addition of L62 as a stabilizer does not increase the viscosity of the dispersion.

With reasonably good agitation, dispersions containing L62 do not break down upon heating to as high as 160° F.

The presence of L62 in the dispersion as a stabilizer gives increased spreading and leveling effects.

Concentrations as high as 3% of L62, based on the weight of the latex, will not increase the water sensitivity of the coatings.

The presence of L62 in the dispersion acts as a foam depressant.

For laboratory samples of Pluronic L62—and technical data on the physical and surface-active properties of the Pluronics—write us on your company letterhead.

\*REG. U.S. PAT. OFF.

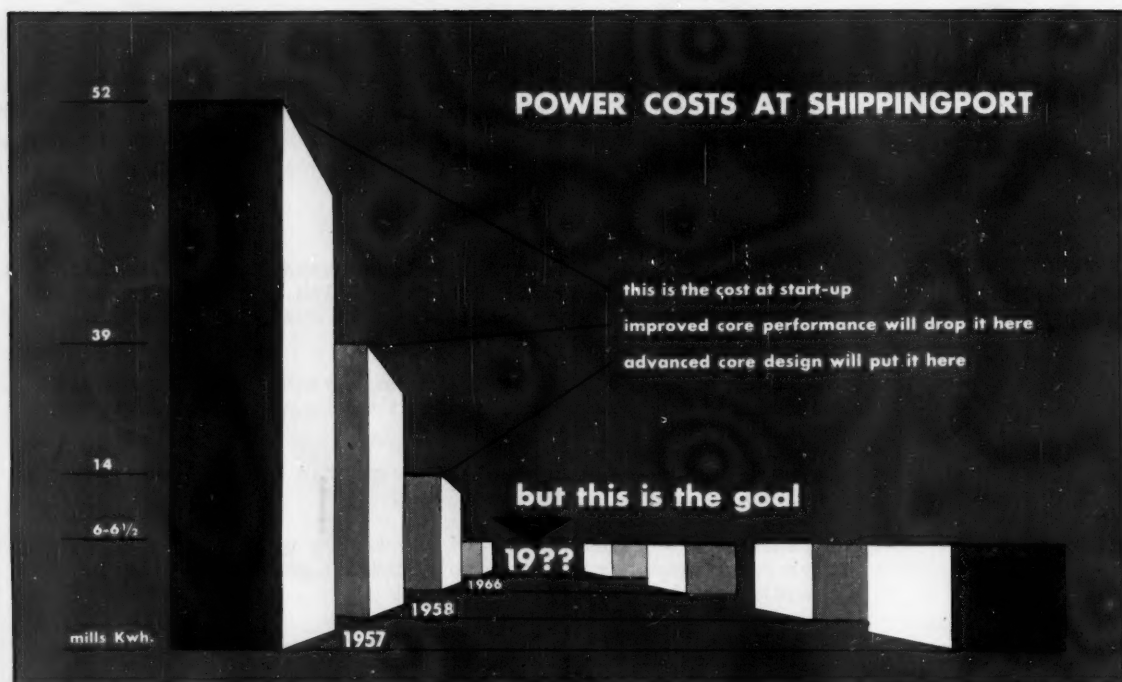


## Wyandotte CHEMICALS

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SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE • MURIATIC ACID • HYDROGEN • DRY ICE  
GLYCOLS • SYNTHETIC DETERGENTS (anionic and nonionic) • CARBOSE ® (Sodium CMC) • ETHYLENE DICHLORIDE • DICHLORODIMETHYLHYDANTOIN  
CHLORINATED SOLVENTS • OTHER ORGANIC AND INORGANIC CHEMICALS





**LATEST DATA:** Atomic power costs will dwarf conventional power costs (right) for years. The question again is . . .

## How Far Away Is Atomic Power?

As the chart clearly shows, atomic power is still far above its goal—a cost competitive with conventional power costs. But while its progress hasn't been as rapid as overoptimistic proponents predicted, neither is its position as retarded as first figures for the Shippingport PWR\* would seem to indicate. Actually, atomic power today lies somewhere between these two extremes. Ahead: a long road fraught with technological bumps.

On the optimistic side are the private power groups (see box p. 52) going ahead with plans for nuclear generating plants. Despite the uneconomic factors attending existing experimental reactors, these power interests are figuring atomic power at costs competitive with, if slightly higher than, current generating costs. From this it's apparent that the projected plants are based on advances in fuel fabrication, reactor design, and construction techniques yet to be realized.

Equally unfounded in practice are

\*Pressurized water reactor.

the high power costs estimated for the abuilding \$85-million PWR at Shippingport, Pa. As Rear Admiral H. G. Rickover, chief of AEC's Naval Reactors Branch and PWR project head, recently disclosed (*CW Technology Newsletter*, Jan. 21) to a select audience, Shippingport power may cost as much as 52 mills/kwh. And even figuring future reactor cores of advanced design, he estimates costs no lower than 14 mills/kwh.

Consolidated Edison (New York) hopes to hit closer to the mark, estimates power will cost 9 mills/kwh. at its Indian Point, N.Y., plant. This is only slightly higher than the company's present 7½-mill/kwh. average, less costly than power from some of its older plants. What's more, says Con Ed, because of other economic factors, atomic power might be "competitive" even at 11 or 12 mills/kwh.

**Technology First:** Admitting that the 52-mill figure could be misleading, Rickover points out that the PWR is being built to advance nuclear technology, rather than produce cheap

electric power. To this end, the plant will be constructed to house reactor cores of different types and sizes; to permit study and evaluation of various design features, other equipment will also be treated the same way. Necessary to nuclear know-how, such flexibility and duplication comes high.

For its part, AEC hopes that Rickover's educated guesses will prove to be too high. It trusts, for example, that reactor performance will be better than the conservative minimum on which estimates were based. For if a reactor core's life proves to be twice what is anticipated, this becomes a factor of six or more. Setting a precedent for such a break, the *Nautilus* PWR has already lasted far longer, put out more power at a lower cost than the most optimistic estimates could foresee a year ago.

But the biggest single factor in Shippingport's power costs, and the one wherein the greatest potential savings lie, is the cost of fuel. Of the total 52-mills/kwh. cost, 39 mills/kwh. are attributed to fuel charges. Rickover's

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## SOLVENT PRICES

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Such a system recovers evaporated solvents for re-use again and again, at a small fraction of their original cost. With solvent prices trending upward, the savings potential of Barnebey-Cheney Automatic Solvent Recovery becomes even greater.

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## PRODUCTION . . . . .

Story begins on p. 50

estimates of future operating improvements depend heavily upon hoped-for reductions in fuel charges to 32 mills/kwh. in the next two years, to 9 mills/kwh. ten years hence.

The four ways in which these fuel savings can be made, according to P. G. DeHuff of Westinghouse's PWR project, are: (1) make the core last longer, (2) pack more uranium into a given space by developing a new alloy to replace the bulky oxide now used, (3) reduce the cost of raw materials, and (4) streamline manufacturing processes.

Looking hopefully to the fourth means of cutting fuel costs, AEC has just announced a new program to attract industry into the chemical fuel processing field. First lump-sum contract for the fabrication of fuel elements in a privately owned facility went to Babcock & Wilcox just last month.

Until now, AEC has been handling the chemical reprocessing of fuel (CW, Sept. 24, '55, p. 63), bearing the cost of the operation. But by the time

private power stations have fuel to be reprocessed, it's expected there will be private plants ready to take over this chore.

**Plants on Paper:** While government atomic projects tackle the tough technological problems, private plants for the primary purpose of producing power are taking shape on paper. As of this date, however, none appear to be close to ground-breaking. They'll all require a lot more planning, says AEC, before construction can begin.

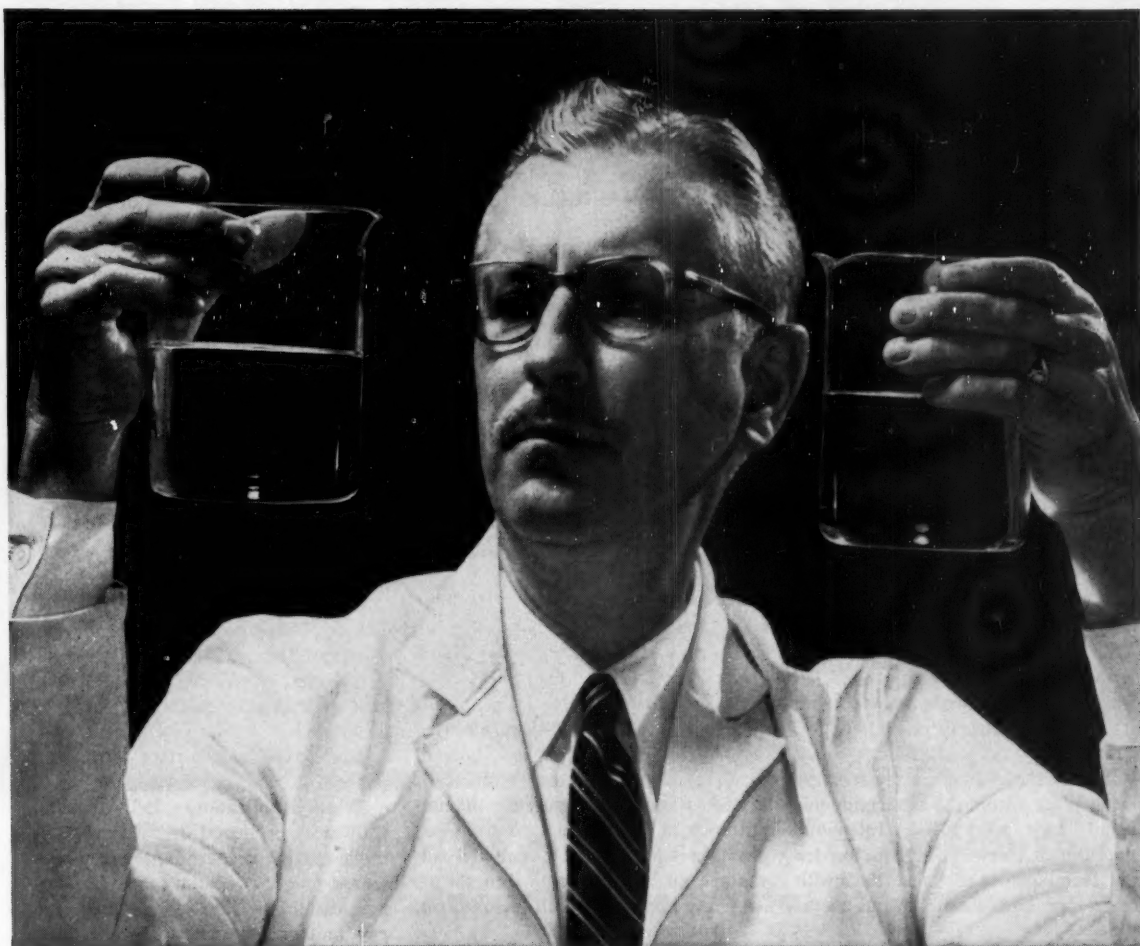
Before it can build a facility intended to house a reactor, a company must first obtain a construction permit. And this is issued only after AEC is satisfied that the firm has presented a workable, safe reactor design, has adequate financial and technical capacity, and will not abandon the project.

Although there is no assurance that a license will be granted, it's understood that no firm will be permitted or encouraged to apply unless AEC is completely satisfied that it qualifies for a license.

## SCORECARD ON POWER REACTORS

	Capacity	Type of reactor	Due in
Consolidated Edison Indian Point, N. Y.	236,000 kw.	pressurized water	1959
Consumers Public Power District Columbus, Neb.	75,000 kw.	sodium graphite	1959
Detroit Edison Group Detroit, Mich.	100,000 kw.	fast breeder	1958
Nuclear Power Group Morton, Ill.	180,000 kw.	boiling water	1960
Pennsylvania Power & Light Easton, Pa., or vicinity	150,000 kw.	homogeneous	1962
Rural Cooperative Power Associates Elk River, Minn.	18,000 kw.	boiling water	1959
Yankee Atomic Electric Co. Rowe, Mass.	100,000 kw.	pressurized water	1957





## Glycerine...clear as water for lighter resins!

**The lab expert has to look twice** to tell the difference between plain water and water-clear Dow glycerine! It's this outstanding clarity indicating high over-all quality—which will give you better, lighter-colored alkyd resins in your paints.

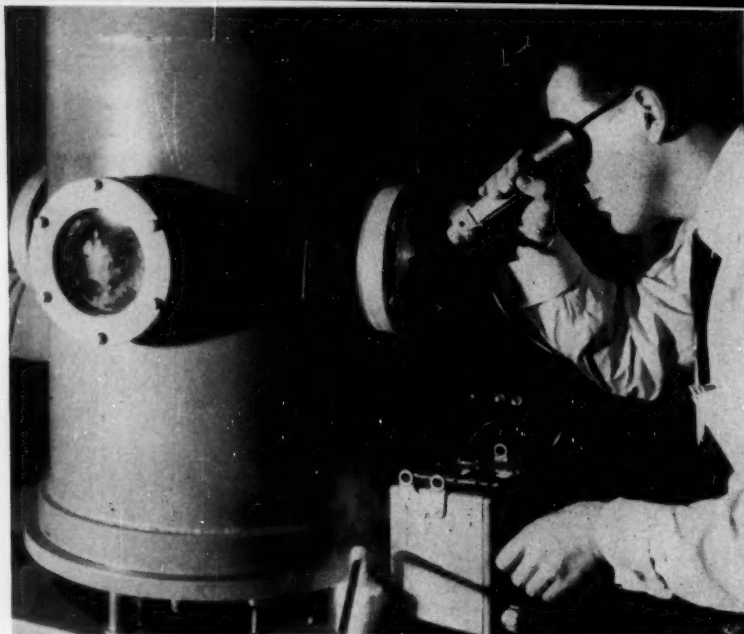
**Other advantages, too.** Stability of supply, for instance. You will find Dow glycerine readily available—and on a stable *price* basis.

Then there's the important consideration of high yields which you'll get consistently from Dow glycerine.

**Send for the new Dow glycerine booklet right away** which explains these benefits in more complete detail. You'll find it worth the small effort—many, many times over! THE DOW CHEMICAL COMPANY, Midland, Michigan, Department OC 840B.

*you can depend on* DOW CHEMICALS





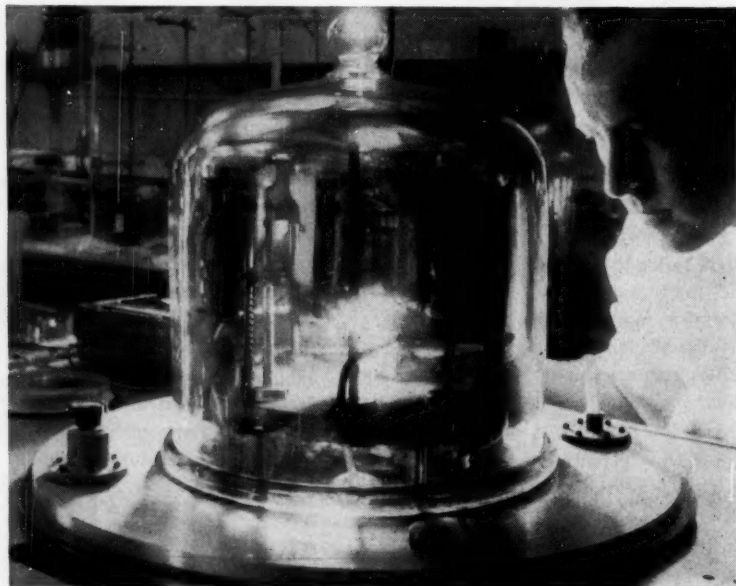
BELL'S LEE observes vacuum process that makes transistors . . .

## Better by Diffusion

It's paradoxical that transistors are highly critical of impurities and, at the same time, dependent upon them for unique electrical characteristics. The trick is to get a closely controlled amount of the right impurity into the proper place within the semiconductor crystal. Last week, Bell Telephone Laboratories (New York) disclosed a new technique to do just that with greater precision than previous meth-

ods permitted (*CW Technology Newsletter*, Jan. 28).

The new operation borrows the chemical process of diffusion developed by Bell to treat silicon cells used in its solar battery (*CW*, Oct. 8, '55, p. 95). Emphasizing the importance of dimensional control, Bell physicist Charles Lee cites chief advantage of the diffusion process as its ability to produce both the uniform,



CHEMICAL SANDWICH is wrapped by vaporizing metal onto surface under vacuum, will then be attached to wire leads.

## PRODUCTION . . . . .

large-area junctions needed in high-power devices and the very thin surface layers required for high-frequency devices.

In cross section, a transistor resembles a three-layer chemical sandwich. Most critical is the center, or "base," layer, which separates emitter and collector layers. By making the base extremely thin (about 50 millionths of an inch), Bell Labs has produced transistors capable of operation in the 500- to 600-megacycle range.

To make the sandwich, a wafer of silicon or germanium semiconductor material is first heated in a vacuum oven. The impurity is then introduced by the vaporization of source crystals containing a predetermined amount of the desired element. Layer thickness is controlled by close regulation of the temperature and duration of the diffusion process.

Another advantage of the diffusion process: base and surface layers can be formed simultaneously. This is accomplished by utilizing a base impurity that diffuses at a faster rate, and by maintaining a relatively higher concentration of the surface layer impurity.

**Wide Application:** Bell foresees transistors produced by the new technique moving deeper into the field now served only by vacuum tubes. In communication service, for example, the new units will be able to handle three times as many channels, or, working with the same number of channels, give three times as much power amplification as any other transistor. And by virtue of their increased high-frequency characteristics, the dime-size assemblies may well find new applications in high-speed computers, other industrial control equipment used by the chemical process industry.

## Process Balance Sheet

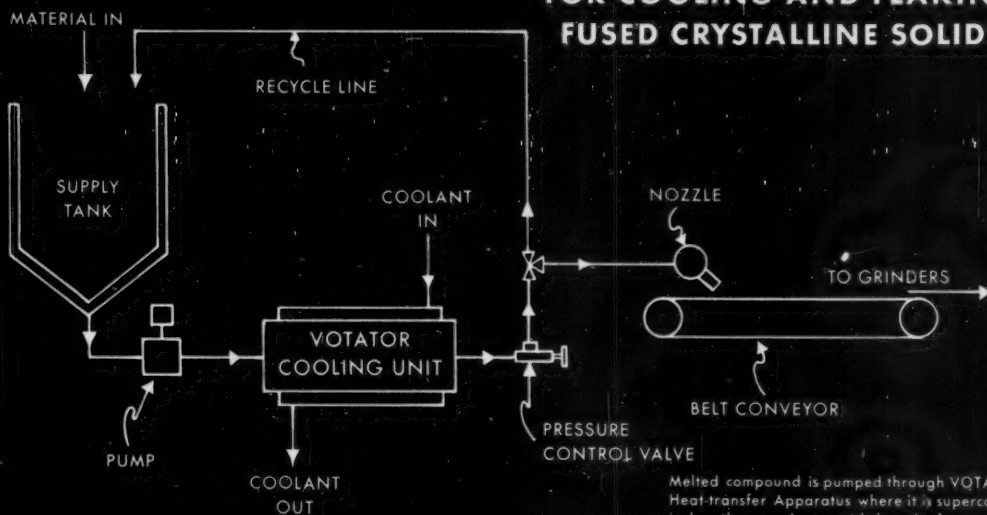
As corporate annual reports tumbled through the mail this week, the Bureau of Mines looked back on 1955 from a different angle, totted up its scientific accomplishments. It was, the bureau decided, a pretty good year.

Here's a quick rundown of Bureau of Mines operations that may alter trends in chemical processing:

- **Rare and precious metals.** It started a program to develop sources of selenium for electronic and chemi-

# FLAKING

## FLOW DIAGRAM FOR COOLING AND FLAKING FUSED CRYSTALLINE SOLIDS



Melted compound is pumped through VOTATOR Heat-transfer Apparatus where it is supercooled in less than a minute, and deposited on a moving metal belt. While on the belt, solidification is completed, and ribbon of compound is then flaked off at the end of the belt.

## Controlled supercooling with *Votator*® Heat-transfer Apparatus produces better crystal structure

A NEW PROCESS for flaking fused crystalline solids employs VOTATOR® Heat-transfer Apparatus for continuous supercooling under precise mechanical control. Applications include DDT and similar compounds (methoxychlor), which on cooling from the melted state supercool to a marked degree. The VOTATOR Heat-transfer Apparatus supercools them to a slush or semi-solid.

This automatic continuous process permits very accurate control of crystallization temperature and other solidifying conditions. As a result, the flaking material has a uniformly fine crystal structure with excellent grinding properties. Without such continuous, positive control, crystallization can be retarded, or the flakes can become waxy and difficult to grind properly. The system is completely enclosed, eliminating danger to personnel from toxic compounds. Automatic operation reduces labor requirements and permits efficient operation at various production rates.

VOTATOR Heat-transfer Apparatus can improve efficiency and product quality in many processes such as listed. Write for copy of Heat Transfer Data Book.

\*VOTATOR Trade-Mark Reg. U.S. Pat. Off.

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**GIRDLER BUILDS** processing plants

**GIRDLER MANUFACTURES** processing apparatus

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**Complete Edible Oil Plants;**

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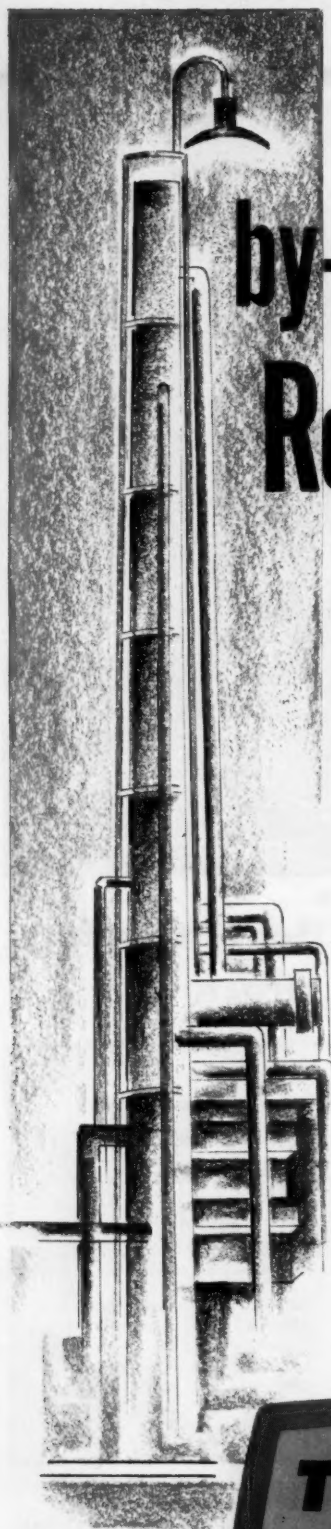
Cooking	Sulfation	Lubrication Grease
Cooling	Nitration	Paper Coating
Controlling Heat of Reaction	Crystallization	Paraffin Wax
Emulsification	Polymerization	Synthetic Wax
Sulfonation	Textile Size	Resins
	Shaving Cream	And other Products

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Division of The Trubek Laboratories Incorporated

## PRODUCTION . . . . .

cal use, opened a new Rare and Precious Metals Experiment Station (at Reno, Nev.) and started there an intensive research program on the rare-earth metals and their compounds.

- **Metal processing.** During the year, the bureau made headway in its efforts to improve beneficiating processes used at the nickel plant at Nicaro, Cuba. It also proved out on a bench scale a lime-soda sintering method of recovering alumina from aluminum plant residues and from high-silica bauxites. And it started a research project (in cooperation with industry) to improve titanium sponge production processes. Methods holding promise of increased recovery of cadmium, germanium, and other metals from zinc concentrates were developed on a laboratory scale.

- **Nonmetallic minerals.** In a Montana phosphate mine that had been abandoned and tagged unsafe for conventional mining, a mechanical mining machine — developed by the bureau and capable of being operated by remote control — was tried out successfully. Work on projects to use low-grade Western phosphate deposits and wastes from rock-washing operations in Tennessee and Florida continued.

- **Ore beneficiating.** Some fundamental research projects were carried out, including tests on flotation, electrostatic separation and use of ultrasonics.

- **Helium.** In addition to shipping a record amount of helium from its four plants (212 million cu. ft.) and making firm plans for a new \$6-million plant to extract helium from natural gas, the bureau developed a helium separation cycle that, it hopes, will reduce power requirements.

- **Coal.** With the Atomic Energy Commission, the bureau started investigations into the use of nuclear energy in coal gasification. And for making high Btu. gas from coal-derived synthesis gas, it developed a new reactor that gives higher gasification rates, produces a better gas. In cooperation with industry, it resumed experiments on underground gasification at Gorgas, Ala. Also, it redesigned the reactor in the latest coal hydrogenation pilot tests. (It's now working on a one-step process to get liquid fuels from coal by hydrogenation rather than by the older two-step process.)

# **A**nisic Aldehyde *Industrial grade and its derivatives*

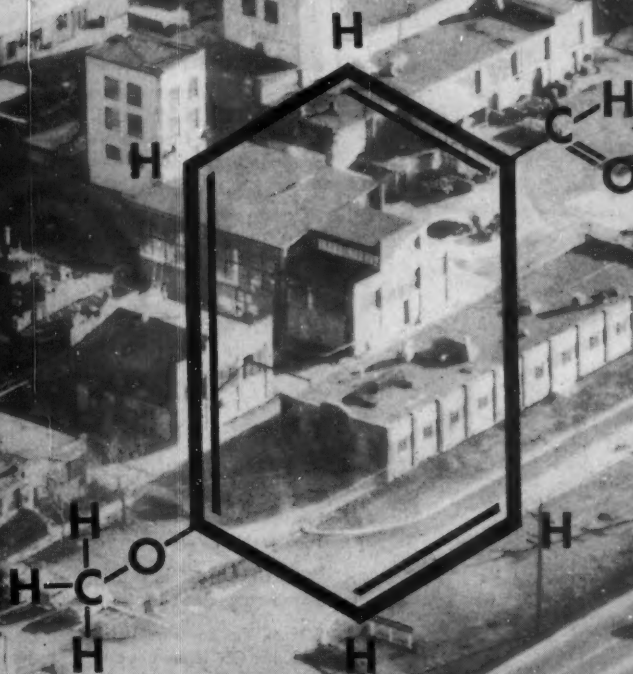
ANISIC ALDEHYDE (Industrial)  
(para Methoxy Benzaldehyde)

ANISYL ALCOHOL (Industrial)  
(para Methoxy Benzyl Alcohol)

ANISYL CHLORIDE  
(para Methoxy Benzyl Chloride)

ANISYL CYANIDE  
(para Methoxy Benzyl Cyanide)

PARA METHOXY PHENYL ACETIC ACID



INTERMEDIATES DIVISION

**The TRUBEK LABORATORIES Inc.**

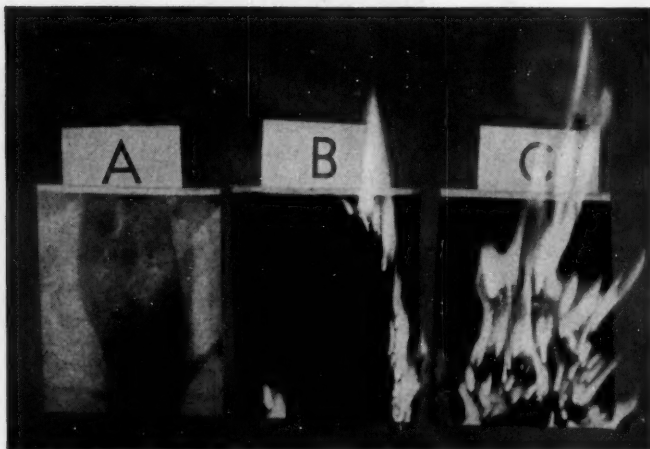
Established 1932

EAST RUTHERFORD

NEW JERSEY

# the flame test

that's pointing the way to new products



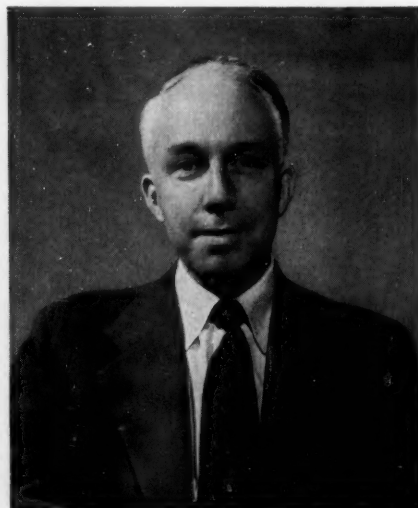
**FLAME RETARDANCY TEST.** 3 lacquers were formulated using same basic formula with exception of plasticizer. In Case A, it was Celluflex CEF; Case B, tricresyl phosphate; Case C, dibutyl phthalate.

Lacquers were sprayed on panels, then ignited for 7 seconds. Upon removal of flame, Panels B and C continued to burn but Panel A (Celluflex CEF lacquer) extinguished itself within 2 seconds!

Dr. Christopher Wilson,  
Director of Research,  
Hudson Foam Plastics Corp.,  
Yonkers, New York

**"CELLUFLEX CEF is the best all-round flame-retardant . . ."—Dr. Wilson**

"Of all the flame retardants we have tried, Celluflex CEF is the easiest to use. It provides more retardance per pound—an important point when you consider that the less additive you need the less possible adverse effect on other properties in the polyester foam. In economy of use, availability and effectiveness, Celluflex CEF is by far the best all-round flame retardant we have evaluated."





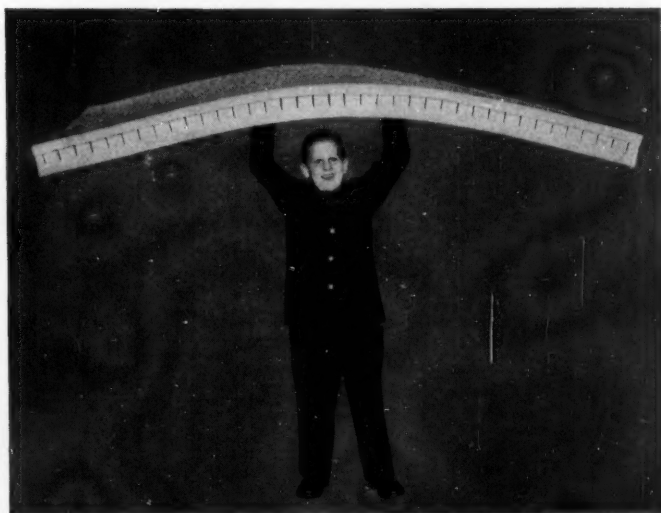
# ...CUSH-N-FOAM,\* for example...

## CELLUFLEX\* CEF builds fire resistance into Hudson's new polyester foam

Hudson Foam Plastics Corp. predicts a brilliant future for its new polyester foam. Cush-N-Foam is fire resistant . . . burns only in the presence of a flame. Remove the flame, and the fire goes out. Independent tests also show that it has twice the cushioning resistance, four times the tensile strength of foam rubber. Cush-N-Foam is virtually unaffected by oils, perspiration, most cleaning solvents . . . doesn't decompose or shred. It's odorless, washable in soap and water. It can be sewed on an ordinary sewing machine, heat-sealed to other plastics.

Celluflex CEF (trichloroethyl phosphate) is being used by manufacturers of a wide variety of plastics and surface coatings—cellulosics, vinyls, polyesters, polyurethanes.

Developed by Celanese research, this new plasticizer offers more flame retardancy per pound, excellent chemical stability, low temperature properties, ultraviolet light stability, and a water-white color clear enough for transparent coatings. Evaluate Celluflex CEF in your own product. For test samples and complete technical data, please write to Celanese Corporation of America, Chemical Division, Dept. 552-B, 180 Madison Avenue, New York 16, N. Y.



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\*Reg. U. S. Pat. Off.



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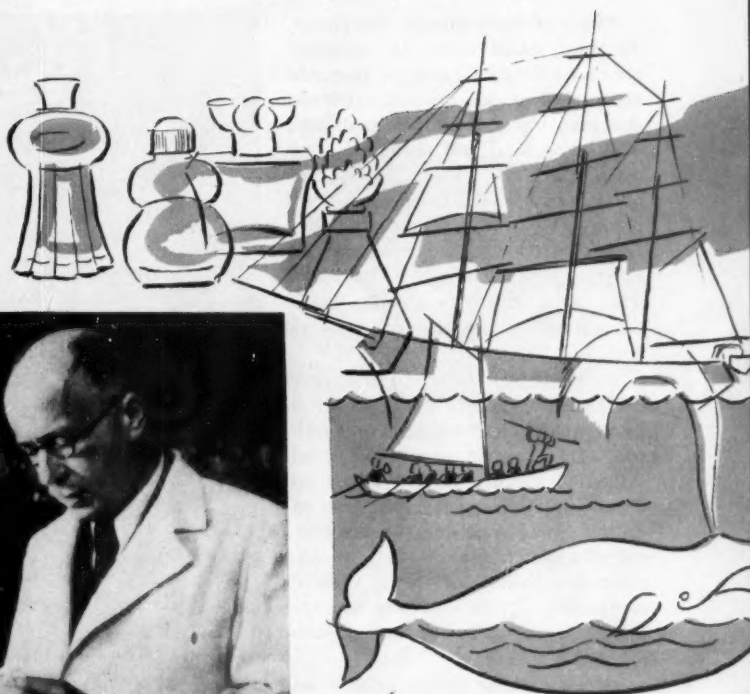
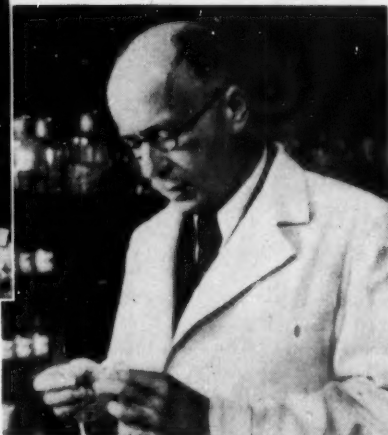
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**STOLL (left) and RUZICKA:**  
In their ambergris-synthesis secrets, a potential treasure trove of chemicals.



## Free of the Whale's Whim

Swiss chemists Max Stoll and Leopold Ruzicka need yield to no one where perseverance is concerned. It took this Firmenich & Co. research team 30 years to synthesize ambergris, the rare perfume ingredient that's found in the stomachs of whales. And this week their achievement is beginning to pay off as Firmenich ships the first commercial batches of synthetic ambergris.

The synthetic will cost perfume makers considerably less than the natural (\$1.09/pt. vs. \$9.76/pt., on an equivalent strength basis). And now, presumably, they can count on a plentiful supply with uniform quality and strength.

Implication: ambergris will be used in perfumes less expensive than those it now enhances.

It's doubtful that any firm is going to grow fat on the proceeds of the synthetic ambergris business. But the synthesis may have repercussions of another type for the chemical industry. Even now, researchers are carefully going over the data uncovered during the long search. New techniques and compounds developed dur-

ing the work are a potential treasure trove for odorant chemists, of course. But, more than that, there's a distinct possibility that the work may be useful in other fields (e.g., steroid chemistry).

And ambergris itself might find applications outside the perfume field. At least one firm is seriously investigating its aphrodisiac properties for potential use in animal husbandry. And it's thought to have properties that might make it useful in medicinals. In the past, investigations into these aspects have been hampered by a lack of availability. A practical commercial synthesis will not only rectify that but will also assure that the material can be had in constant, reproducible quality.

Other firms, too, have given attention to the problem. Givaudan-Delawanna (New York), for one, thinks ambergris can be made by methods other than those outlined in the Firmenich patent, but refuses to disclose whether it's pushing synthesis work. A German company, Dragoco (Holzminden), reportedly is offering synthetic ambergris for sale, although no details of their product are known.

The Firmenich synthesis is largely a tightly held secret, but a pretty good idea of what it's all about may be had from patents.\*

Briefly, they tell of the isolation of two key intermediates from ambreine, the main constituent of ambergris: gamma-dihydroionone ( $C_{13}H_{22}O$ ), responsible for odor; and ambreinolide ( $C_{17}H_{28}O$ ), a gamma lactone that gives fixative power (ability to hold and enhance other odor components of a perfume blend).

By selectively oxidizing these two compounds, Stoll and Ruzicka uncovered a number of products\*\* which contribute to ambergris' odor and fixative properties. All of these compounds may be synthesized from starting materials that are not derived from ambergris.

The most recent derivative uncovered, an intramolecular acetal, ( $C_{18}H_{30}O_2$ ), is believed to be the last secret of the ambergris odor. It's prepared by oxidizing manool ( $C_{20}H_{34}O$ ), a readily available diterpene alcohol obtained from the wood of the *Dacrydium* family.

\*Granted: Switzerland, 285,126; 299,369; 302,014; 302,015; Germany, 860,214, France, 1,028,088; Great Britain, 701,911. Patents pending: Netherlands, application 156,357; U. S., application 701,911.

\*\*Including an unsaturated oxide  $C_{17}H_{26}O_2$ , epoxides  $C_{13}H_{22}O$  and  $C_{17}H_{28}O$  and ketones  $C_{12}H_{18}O$  and  $C_{18}H_{30}O$ .



**Plenty of Problems:** At first glance, 30 years seems to be an unreasonably long time for top-flight researchers to work up a successful synthesis. But even under favorable conditions, duplicating a natural product is very often a ticklish problem. In the case of ambergris, the difficulties are compounded: not only is the chemistry tricky, but also the material is found only in 1% of the whales captured. This gave researchers only small amounts of the compound to work with.

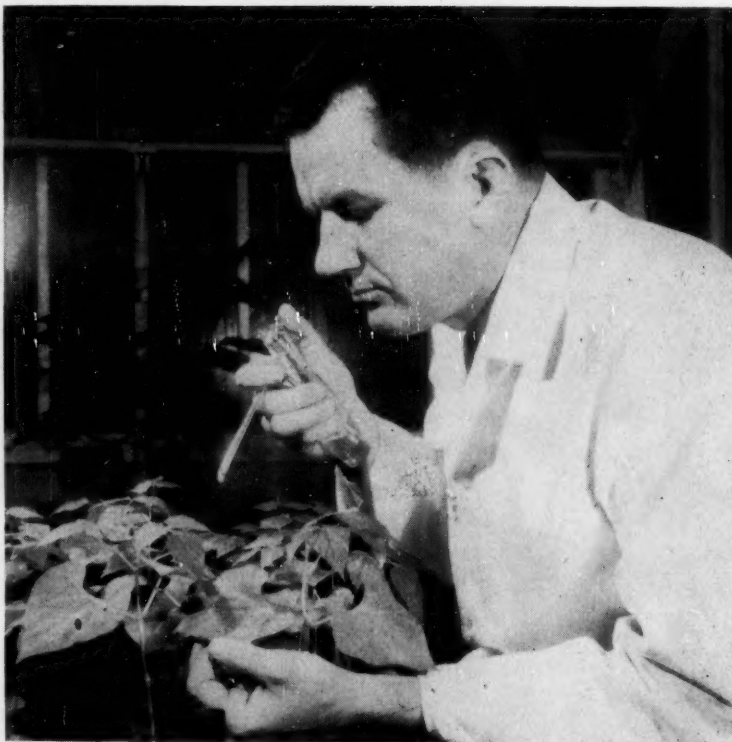
To make matters worse, the only distinguishing quality of ambergris is its odor. And olfactory tests are notoriously troublesome; even those most skilled in the art are led astray on occasion. (Stoll, for example, gave up on the synthesis of irone—a constituent of violet fragrance—only to discover that he had the answer without recognizing it: his olfactory perception had been numbed by overexposure to the fragrance.)

Success in their chosen fields is no novelty to either chemist. Stoll, who heads up Firmenich's research department, is renowned for his research in essential oils, received the Fritzsche Award in 1953. Ruzicka won the Nobel prize in 1939 for polymethylene and higher terpene studies which smoothed the way to recent hormone syntheses. He occupies a chair at the Swiss Federal Institute of Technology (Zurich).

It is, of course, hard to conceive of such an extended project in the labs of an American firm. Edward Morrish, technical director of Firmenich's New York Division, explains it this way: "The atmosphere is different. In Europe, a researcher is considered more of an artist—not to be hurried."

The advent of synthetic ambergris doesn't necessarily augur a drop in deluxe perfume costs, since the powerful scent is but a small fraction of the finished perfume. What's more, perfume makers are slow to change their formulas, feel that the value of their product depends largely on the artistry of the blend. The synthetic's performance in these formulas, yet to be evaluated, will be the key to the speed of its acceptance by the industry.

Although the commercial significance of the 30-year achievement is hard to accurately assess now, it's clear that the perfumer is no longer dependent on the whim of the whale.



MERCK'S GRAY: In antibiotic plant sprays . . .

## New Work for Glycerine

Three potentially significant chemical developments were brought into focus last week as the Glycerine Producers' Assn. granted its 1955 Glycerine Research Awards. One was for the use of glycerine to enhance the effectiveness of antibiotics against plant blight; one for pinpointing glycerine derivatives in an important role in biosynthesis; and one for a glycerine-base process of upgrading sodium sulfate waste.

For its top award, the association picked Merck plant physiologist Reed Gray, presented him with \$1,000 and an honor plaque for studies of glycerine in streptomycin plant spray formulations. His find: glycerine increases absorption of the antibiotic by plants, enhances its effectiveness against common bacterial bean blight—a disease that causes crop damage estimated at \$6 million/year.

Gray's work, conducted at Merck's fundamental research division in Rahway, N.J., centered on agents that would quickly increase strepto-

mycin absorption by plant foliage, thereby lowering the drug's high cost of application and extending its usefulness. One major streptomycin drawback has been low penetration in certain plants, which has limited its effectiveness against bacterial infections. Increased penetration also permits lower concentrations of the antibiotic in plant sprays, eliminates the problem of its removal from plant leaves by rain a few hours after application.

In sifting potentially useful penetrants, Gray sprayed the twin primary leaves of bean plants with streptomycin solution with and without various additives. After 24 hours, the leaves were harvested, washed, and assayed biologically for streptomycin content to determine any increase in absorption attributable to the additive. Promising agents were tested further on a variety of plants and diseases.

Most effective of the compounds tried, glycerine (in 1% concentration) increased the drug's absorption in

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<b>OCTYLENE OXIDE</b> mixed 1,2-and 2,3-epoxyoctanes	<-50	76-78 (45mm)	0.830	v. sl. soluble in water, soluble in hydrocarbons and other organic solvents.
<b>DODECENE OXIDE</b> 1,2-epoxydodecane	ca -10	97-98 (3.5mm)	0.836	insoluble in water, soluble in hydrocarbons and other organic solvents.
<b>C<sub>16</sub>-C<sub>18</sub> OLEFIN OXIDE</b> mixed 1,2-epoxyhexadecane and 1,2-epoxyoctadecane	ca 15	> 110 (0.5mm)	0.842	insoluble in water, soluble in hydrocarbons and other organic solvents.

#### POTENTIAL USES:

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perfumeries, cosmetics, surfactants, plastics, lubricants
- (4) acid scavenger
- (5) corrosion inhibitor
- (6) stabilizer for chlorinated compounds
- (7) monomer
- (8) organic synthesis intermediate

We shall be glad to supply experimental quantities and technical assistance to chemical laboratories interested in possible applications of these epoxy compounds. Technical literature is also available. Your inquiry about other members of this series (C<sub>4</sub>-C<sub>24</sub>) is invited.

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"IF IT STICKS IT'S HADLEY'S"

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**RESEARCH . . . . .**

bean plants 10-30 times in the 24-hour period, also aided penetration of quince flowers, pepper, tomato and tobacco plant leaves. (Streptomycin combats tomato and pepper bacterial leaf spot, fire blight in fruits.)

New glycerine uses and consumption resulting from Gray's work could be substantial. Besides buttressing streptomycin's role in agriculture, glycerine may prove equally valuable in plant sprays containing other antibiotics for streptomycin-resistant plant diseases. An there's a chance that farmers can turn glycerine to advantage in systemic insecticides, fungicides, plant growth regulators, fertilizers, and trace element application.

University of Chicago biochemistry professor Eugene Kennedy won GPA's second award (\$300 and an honor plaque) for his research in the biosynthesis of phospholipids (which are essential in certain body functions), identification of glycerine derivatives

as precursors of these compounds. Kennedy synthesized suspected phospholipid precursors in radioactive form, incubated them with enzymes, observed their biological transformation. His studies elucidated the role of glycerine and L-alpha-glycerophosphate as phospholipid precursors, also resulted in the isolation and purification of the enzyme, glycerokinase, which phosphorylates glycerine and is the key to glycerol's conversion by the body to either phospholipid or carbohydrate. Kennedy also turned up a new type of coenzyme, the cytidine coenzymes, linked these to glycerophosphatide biosynthesis.

Third award (\$200 and an honor plaque) went to Austrian-born Karl Lauer, chemistry professor at the University of Alabama's (Tuscaloosa) pulp and paper technology department. Lauer's achievement: a new process using slaked lime in glycerine-water solutions to convert sodium sulfate into caustic soda. No academic curiosity, it could put waste sodium sulfate\* recovery on a new economic footing.

Lauer used a 65% mixture of glycerine in water, obtained a 98% conversion of sodium sulfate into a concentration of 5.6% caustic soda. Best previous effort in water alone: 44% conversion, 0.98% caustic.

**Building Upturn**

Although only partly compiled, a new Manufacturing Chemists' Assn. survey reveals last year's completed and under-construction laboratory facilities cost more than \$67 million. This year's research expansion round (CW, Jan. 28, p. 55) added these new entries, got set to rival '55's:

- Davison Chemical Co. Division of W. R. Grace & Co. started construction of a 52,000-sq.-ft, three-story research laboratory in Howard County, Maryland, expects to finish it this year. It will accommodate 160 staffers.

- International Salt, Inc. (Scranton, Pa.) opened a new research and development lab in New York City under the direction of Kurt Ladenburg.

- Plans for a nuclear laboratory at

\*In rayon manufacturing, e.g., for each ton of rayon produced, two tons of sodium sulfate are obtained in by-product liquors. But it is not generally considered feasible to recover and ship the compound to users.



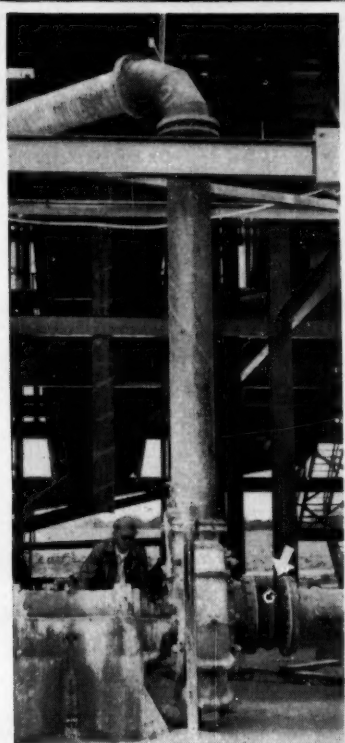
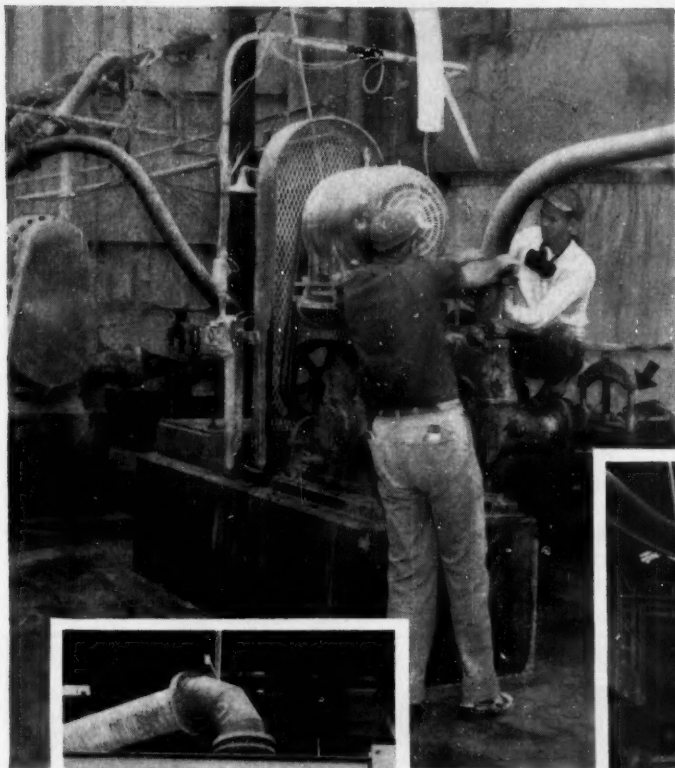
**Electronic Stop Watch**

BILLIONTH-of-a-second timing is reportedly possible with this device developed at Westinghouse Research Laboratories (Pittsburgh). An improved photomultiplier tube, it strengthens weak radiation pulses, detects the time intervals between them. Its first assignment: precise measurement of atomic particle speeds in nuclear reaction probes.



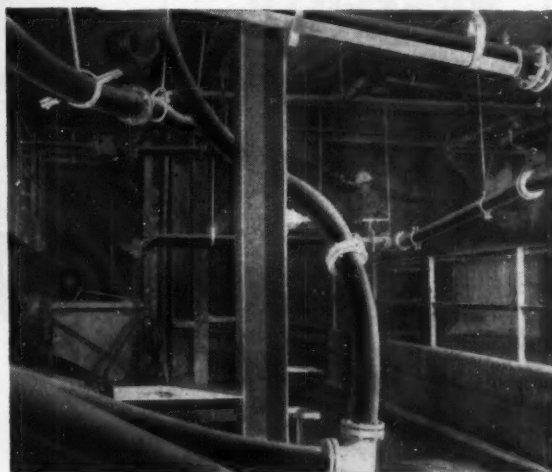
**"WE DON'T HAVE TIME TO CODDLE  
PIPING OR  
VALVES—  
SO WE USE  
U. S. RUBBER  
PRODUCTS..."**

says production official of  
phosphate chemical plant



U. S. Expansion Joint (arrow) connecting a leak-proof fitting to a vibrating pump in phosphate plant.

The U. S. Rubber Pilot pinch valve (arrow) connects to the big tank in the background (with U. S. Giant Acid Hose at right) and serves to control the flow of acid, gypsum and solids to the digester tank, from the pump.



U. S. Rubber Pilot pipe, dominates this picture of slurry tanks for first stage filters. Note also U. S. Acid Hose.

This large plant in Florida operates 24 hours a day, 7 days a week, making fertilizer and animal food supplements. Corrosive acids, (phosphoric and sulphuric) flow freely, and without damage, through U. S. Rubber Giant® Acid Hose. "Metal hose would clog, corrode and crack," says the production official of the plant. "We also use U. S. Rubber Pilot® Pinch Valves—because they don't clog, freeze or need to be babied like metal valves."

This plant also uses U. S. Expansion Joints and U. S. Pilot Pipe and U. S. Giant Acid Hose to control, pipe, pump and convey the flowing semi-solid acids. All of these products are easy to install, easy to clean and maintain. The plant's officials have found that U. S. Rubber products are unmatched in facilitating production and in reducing maintenance and equipment charges. They have standardized on "U. S." products. It will pay you to take any and all corrosion problems to a "U. S." specialist. Get in touch with any of our 27 District Sales Offices, or write Mechanical Goods Division, United States Rubber, Rockefeller Center, New York 20, N. Y.



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## **RESEARCH**

Schenectady, N.Y., have been revealed by Alco Products, Inc. The \$230,000 facility is slated for completion by May, will be used for nuclear experiments in connection with Alco's contract for design and construction of the Army's package power reactor.

- Research and testing firm Truesdail Laboratories, Inc. (Los Angeles) has established what is reportedly the first independent chemical laboratory in Hawaii.

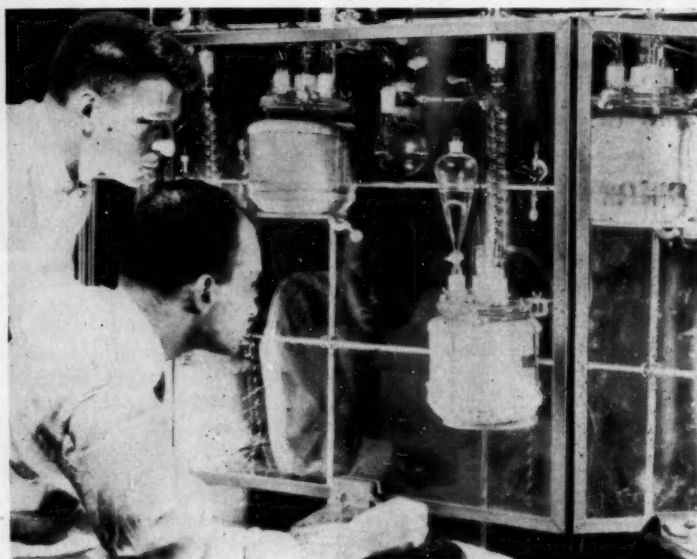
- And at Morris Plains, N. J., Warner-Chilcott Laboratories expects its \$1.5-million laboratory expansion, which will almost quadruple the existing 16,000 sq. ft. of floor space, to be complete by March.

**Oxygen Apparatus:** Kilpatrick Electronic Laboratory (Norristown, Pa.) is out with a new recording oxygen electrode apparatus—the 5540 Polarograph—that's said to offer a quick and

simple way of measuring relative changes of oxygen concentration in aqueous solutions. Price: \$650, with recorder.

**Cancer Foil:** Recent studies at Lederle Laboratories (Pearl River, N.Y.) have turned up cancer-inhibiting properties (in transplanted animal tumors) in several 2-amino-1,3,4-thiadiazoles. Most active: the parent compound, 2-amino-1,3,4-thiadiazole. The lower alkylamino and 2-acylamino derivatives were also active and less toxic than the parent amino compound, while the 2-phenylamino derivative was inactive.

**Writing Guide:** A booklet titled "How to Write Technical Reports and Still Maintain Your Sanity" is newly available from Technical Marketing Associates, Inc. (Concord, Mass). Price: 1 to 99 copies, 25¢ each.



## **Shielding Engineers**

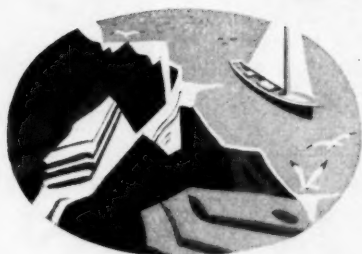
PROVING that even simple devices can benefit from research, Fisher Scientific (Pittsburgh) engineers have designed added safety into the firm's line of laboratory shielding. New feature: vice-like jaws (closed by lever action) that replace wing screws for clamping

shields to their feet, eliminate the breakage from excessive screw tightening and accidental bumping, permit the shield to be moved with feet attached to a new location. Fisher safety shields, equipped with its new Safety-Sure Feet, cost \$40-97.50. Price of feet: \$6.50/pair.

# HARSHAW *Tableted* CATALYSTS

FROM

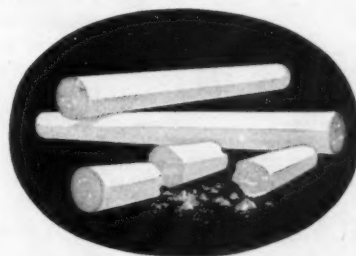
## *strong*



## *as rock!*

TO

## *soft*



## *as chalk!*

**whatever you specify**

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Compounds	Copper-Chromium Oxide
Hydrofluoric Acid	Magnesia
Anhydrous	Nickel
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Chrome Alumina	Zinc-Chrome

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# ...AMONG SOME 3500 ORGANICS

P 7112	Ethyl Ricinoleate (Pract.) BP 182-185°/1 mm.....	25 g. ..\$2.00	100 g. ..\$6.50
	$\text{CH}_3(\text{CH}_2)_7\text{CHOHCH}_2\text{CH}(\text{CH}_2)_7\text{COOC}_2\text{H}_5$ ... MW 326.52		

Rubbed between our fingers, this feels like one of those oils that our molecular distillation lab would call an **anti-lubricant**. Such oils, when they get into pump gear teeth promote galling, not sliding. The process by which one of the world's best lubricants is so completely changed is the *umesterung* of a good grade of castor oil with ethanol in the presence of dry hydrogen chloride. We measure the viscosity of our ethyl "castorate" at less than 30 centi-

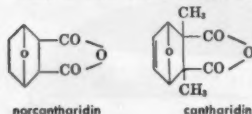
poises (as compared with 772 centipoises for castor oil at 25°), its cloud point at -18°.

It seems to us that on the shelf of one broadly interested in the physical and chemical mechanisms by which lubricants lose their lubricity, particularly lubricants with a free hydroxyl group, there ought to be a little bottle of Eastman P 7112.

7126	7-Oxabicyclo [2.2.1] heptane-2,3-dicarboxylic Anhydride.....	1 g. ..\$2.00	5 g. ..\$8.00
	$\begin{array}{c} \text{OCHCH}_2\text{CH}_2\text{CHCHCOOCO} \\ \text{O} \quad \text{O} \end{array}$ ... MW 168.15		

This compound is also known as norcantharidin because cantharidin can be formalistically regarded as derived from it by partial dehydrogenation and methylation.

This is idle theorizing about a compound which **even Hippocrates knew** as the virulent, vesicant essence of the blood of certain species of insects. Cantharides is one of the few



drugs the old fellow mentions. Today it is little more than a pathetic but dangerous relic of the days of heroic medicine.

Cantharidin nobody can accuse us of selling, but for the benefit of any chemist fascinated by its strange endoxo structure, there is now Eastman 7126.



*Lytta vesicatoria*  
(L.) (Cantharidae)

7175	Dicyclohexanone Oxalylidihydrazone.....	5 g. ..\$2.50	10 g. ..\$4.50
	$\text{C}_6\text{H}_{10}:\text{NNHCOCONHN}:\text{C}_6\text{H}_{10}$ ... MW 278.36		
7157	Oxalyl Dihydrazide MP 240° dec.....	25 g. ..1.35	100 g. .. 3.80
	$\text{NH}_2\text{NHCOCNHNH}_2$ ... MW 118.10		

The first is a new reagent for copper and the second an intermediate toward it. On the strength of a Japanese pharmacological report that the intermediate has bactericidal properties, we decided to save some of it for stock, in case anybody wanted to check up on those properties.

The world, it would appear, has need for **yet another reagent for copper**. The 14 already listed in our catalog are not enough. Each has its own shortcomings.

Diethyldithiocarbamic Acid Sodium Salt (Eastman 2596), for example, forms interfering colors with iron, cobalt, nickel, and bismuth and calls for solicitude over monochromatism in applying Beer's Law to measure the yellow complex it forms with copper. Diphenylthiocarbazone (Eastman 3092) demands close watch on pH to keep a reasonable specificity, besides being confusingly colored itself. 2,2'-Biquinoline (Eastman 6183) has the Cu specificity, but with a molar absorptivity index of only 5900, it is a little low on sensitivity.

Compare this figure with the 16,000 molar absorptivity index of the cupric complex of dicyclohexanone oxalylidihydrazone, which one Scandinavian chemist first prepared by reacting oxalyl dihydrazide with cyclohexanone and two other Scandinavian chemists put to work measuring copper in paper pulp. The sensitivity works out to about 0.03 ppm. Of 48 other common ions tested, not one gave an interfering color. Lead, zinc, nickel, and particularly cyanide did interfere, but forthrightly, by preventing or delaying color formation, not by dissemblance.

Beyond a doubt, even this negative interference will some day exasperate some analytical chemist into devising yet another reagent for copper. We hope to sell that one, too.

Will you accept a gift, meanwhile, of a procedural abstract for dicyclohexanone oxalylidihydrazone in the determination of copper in serum?

*Prices quoted subject to change without notice.*

Perhaps there will be a little spurt of business in these four organics now, but that's not what we're really after. What we're really after is to make sure that you have a copy of our catalog of some 3500 Eastman Organic Chemicals. If you don't, please write *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y.



**Eastman Organic Chemicals**  
Also...vitamins A and E in bulk...distilled monoglycerides

**Distillation Products Industries** is a division of **Eastman Kodak Company**

# Technology

## Newsletter

CHEMICAL WEEK

February 4, 1956

### Now look at polypropylene.

Probably you've been hearing rumblings about it for some time. But in a matter of months, they'll turn to a deafening roar.

Although nothing has officially been said, the German mining interest, Hibernia, an early licensee of the Ziegler polyethylene process, is making polypropylene in a 1 ton/day pilot plant. That may sound like a big order for pilot operations on such a new product, but you must remember that a ton-a-day unit is a standard German approach to piloting, also that the figure represents capacity, not production.

Also in Germany, Hoechst and Huels are knee-deep in polypropylene activity. And in England, Petrochemicals Inc., a member of the Shell family, is piloting the product.

Up to now, polypropylene has been considered the special domain of Italy's Montecatini, through its access to the work of Julio Natta of the Milan Polytechnic Institute (*CW*, April 2, '55).

Natta's work in some respects parallels the work of Ziegler. The patent and licensing arrangements are not at all clear at present, but Ziegler licensees on the continent are apparently able to utilize Natta's know-how.

Essentially, Natta uses heterogeneous solid catalysts to direct the polymerizations toward a product with high molecular weight and crystallinity. Little has been reported about the make-up of the catalyst. It's referred to as a modification of a Ziegler type. Actually, there are several combinations of the heterogeneous catalyst that are suitable. Generically, they're all metal alkyl-metal halide complexes.

Similarly, few samples of the product have been available. But it's been highly touted for both films and fiber. One of its strongest selling points is its melting point, which runs to 150 C. This is easily 25 C higher than the melting points of the newer linear polyethylenes.

The edge that the Europeans hold may be more apparent than actual, however. Reason: U.S. companies are actively looking at polypropylene and are probably a lot further along than the recent literature would indicate.

Most of the U.S. Ziegler licensees are believed to be actively investigating the polymer. And petroleum refiners have more than an academic interest in it:

Jersey Standard has done a lot of work on polymerizing olefins—including propylene—as has Standard of Indiana. And Phillips has demonstrated that the low-pressure, catalytic (chrome oxide) process it describes in Belgian patent 530,617 can turn out a polypropylene with a molecular weight of 50,000. (For purposes of comparison, some of Natta's product reportedly runs well over 100,000 m.w.) Shell, through its affiliation with Petrochemicals Ltd., and its long-time interest in both resin production and the use of propylene as a raw material, would seem to be a natural. The firm says, however, that it has no immediate interest in polypropylene.

In fact, the present level of research activity on polypropylene indicates that it may eventually rival polyethylene as a tonnage resin. One of the reasons why it looks so attractive is the availability and low cost of propylene

## Technology Newsletter

(Continued)

But comparing ethylene with propylene is difficult, costwise, for ethylene is a commonly sold raw material, while there is little noncaptive market for propylene. (There is some—e.g., Hercules buys propylene for its phenol production.) And the two are closely intermeshed at the source.

**Take, for example, the cracking of propane.** Even if you're going for high conversion to ethylene, you get a good proportion of propylene (about half as much). If you're after propylene, you get the two in approximately equal amounts. To get the ethylene, you have to remove that from the mixture first (de-ethanize). After that, recovery and concentration of the propylene costs another 1¢/lb. The question then is a matter of bookkeeping: what other charges do you allocate to propylene production? (An important consideration in assessing propylene costs is that the refiners can feed propylene and butylene to cat poly units for making gasoline, without stripping out the aliphatics.)

In that manner, you can work up figures to show that propylene is worth 1-2¢/lb., compared with ethylene at 5¢/lb. But these figures are tricky; the costs will vary with the supply and demand at the place in question as well as the purity of the product being considered.

•

**If cheap power from atomic fission** is far from being "just around the corner" (*see p. 50*), then how far away can cheap power from nuclear fusion be? Though obviously it must be some distance off, the Sherwood panel (*see p. 13*) this week made several points that will carry a lot of weight in any long-range thermonuclear planning:

- A thermonuclear machine would be safer to operate than a fission reactor: the fuel in use would be small and the reserve would be kept apart, unable to take part in the fusion until it were put into the reaction "container."
- A thermonuclear machine that consumes hydrogen as a fuel would produce intense fluxes of neutrons. And that may be the key to the economic success of the fission reactor business—when and if fusion power becomes feasible. Reason: fission plants for power or heat would be a logical market for the mass of neutrons flooding from such a reactor as a by-product.

•

**Despite impressions to the contrary,** the nation's largest philanthropic foundations account for precious little of total spending for scientific research. A Russell Sage Foundation study, published last week by the National Science Foundation, found that 77 large foundations spent a total of \$164 million in 1953. Of this, \$26 million (19.8%) went for scientific research—less than 1% of the estimated national total for scientific research.

**Two other developments about which you can expect to hear more:**

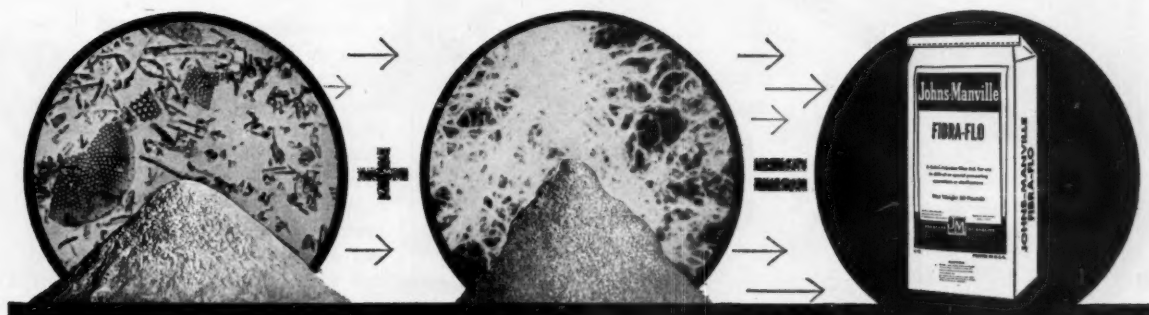
- Calera Mining is building a pilot plant at Garfield, Utah, to explore the possibilities of producing cobalt, electrolytically. The firm is presently turning the metal out in granular form.
- Chemical Process Co. (Redwood City, Calif.) has developed two homogeneous liquid epoxy hardeners. Tagged Dion RP-7 and Dion RP-22, they're based on meta-phenylene diamine and 4,4'-methylene dianiline, respectively, may prove to be significant competition for other liquid hardening agents (*CW, May 1, '54, p. 44*).



Johns-Manville announces a new line of Filter Aids

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**DIATOMITE**—Celite's unique particles provide highest clarity at fastest flow rates.

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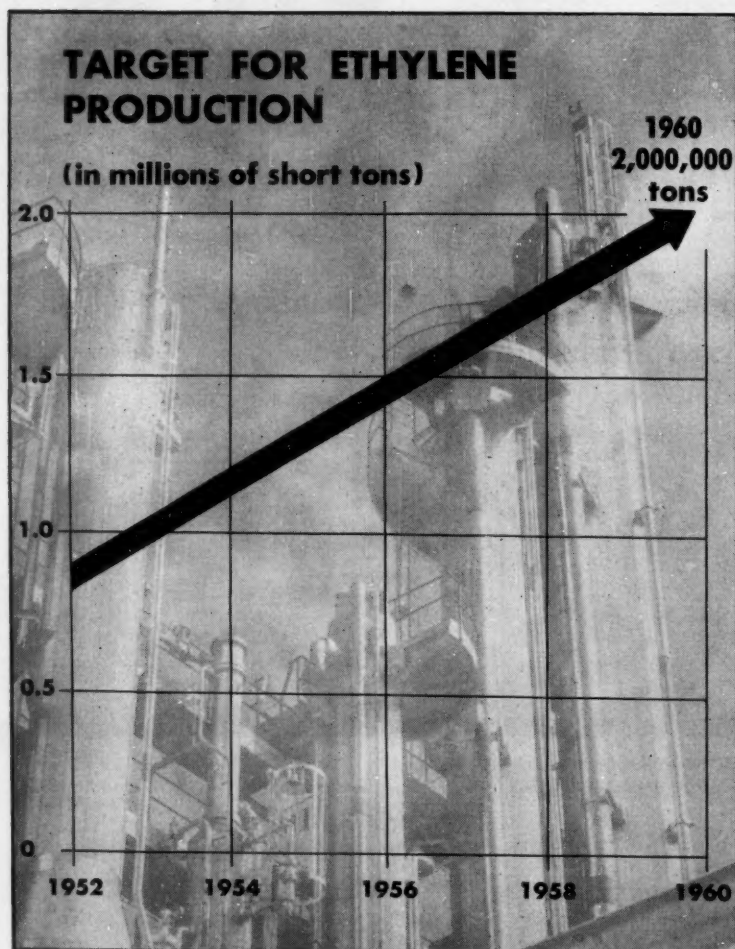
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## More Needed, More Coming

U. S. ethylene production is now poised for a surge to at least 2 million tons/year by 1960. One reason: today's fast-rolling polyethylene bandwagon.

**Ethylene—the "prolific precursor"**—has already pushed its way to top position among petrochemical intermediates; its '55 output, for example, was pretty close to 1.3 million tons. Now the spectacular growth of polyethylene ensures a further big production surge for the gas, will help boost total ethylene output to at least 2 million tons/year by 1960.

Realization of this goal even now seems assured because, within a year or so, several plant expansions will up ethylene capacity over 200 million lbs.

Monsanto, for one, will increase capacity of its Texas City plant by 150%—from 60 million lbs./year to 150 million. The new unit, which is scheduled to go onstream in the first half of '57, will make ethylene solely for captive uses, i.e., for the manufacture of styrene, polyethylene, and vinyl chloride.

The Phillips installation at Sweeney, Tex., to be completed by the end of this year, will turn out about 145 million lbs./year.

Gulf Oil's second ethylene plant at

Port Arthur began operations last July, added 220 million lbs./year to the company's previous 145-million-lb. capacity. Gulf spokesmen now confirm trade talk that a third unit is under consideration, but emphasize that it's still strictly "in the talking stage."

And it's no rumor that Brea Chemical and Koppers have a joint polyethylene project under way. Time-tabled for completion in mid '57, the plant will turn out 50 million lbs./year of polyethylene. The source of ethylene feed stock hasn't been announced; in fact, both projects are still in the "fact-gathering and report-writing" stage.

Meanwhile, Tidewater Oil is reportedly looking for a partner in a petrochemical venture; the project would be based, at least in part, on present and potential ethylene capacities at its Avon, Calif., and Delaware refineries.

So far, most ethylene activity has been concentrated in the Southwest; and now Esso is readying another in that area. The new ethylene recovery unit, at Baton Rouge, La., will cost about \$12 million, begin to take shape in May, and is scheduled for completion in the spring of '57. The output will be partly captive and partly for sale.

And it isn't official, but will soon be announced that Esso has also let a contract for what will be the first ethylene plant in the East. Target date for completion of the proposed Bayway, N.J., installation is sometime during the latter part of '56.

**Who's Next?** Other would-be producers of ethylene, mostly oil companies, are also studying the economics of putting up an ethylene plant somewhere along the Eastern seaboard.

But for the time being, most are mum as to where, when, and how large a venture would be economically feasible. A problem of major importance is the rather obvious need of garnering a sizable assured market. Ethylene plants must be big if they are to pay off, and waiting customers would minimize the risks.

Nonetheless, chances are there will be additional ethylene producers in the East, the only question being "who's next?"

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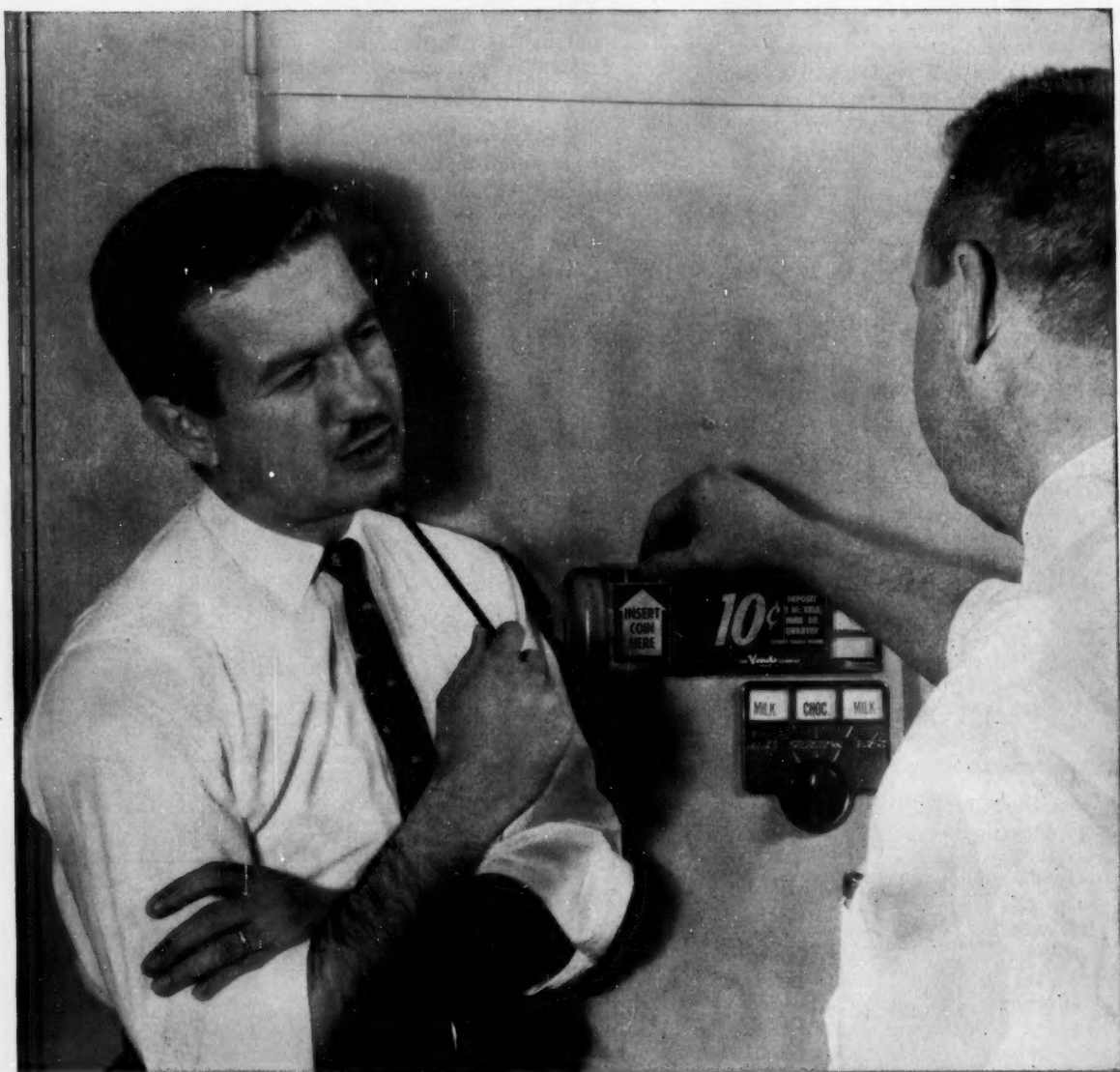
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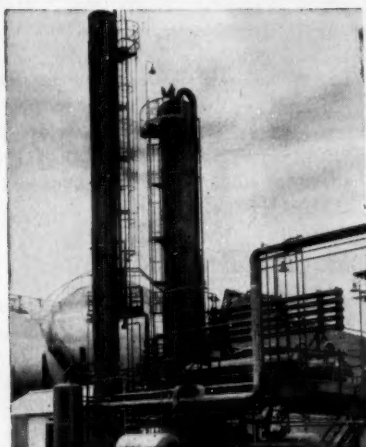
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## MARKETS . . . . .

turers in some other segments of the nation's expanding chemical industry, ethylene producers aren't faced with threats of overcapacity. The reason, of course, is that ethylene's future is mapped by the fast-expanding markets of its diverse and important products.

The biggest pipeline is into ethyl alcohol production, which, in '54, drew off 30% of the total U.S. ethylene output. The same percentage probably held pretty well in '55, and translates into a 780-million-lb. consumption of the gas for this purpose.

Trailing ethyl alcohol—at approximately 25%—is ethylene oxide's take. The oxides' major outlet, ethylene glycol, has been experiencing a market slump in recent years; but last year's new-car boom may have arrested the trend. If so, ethylene oxide use may have risen; and this, in turn, might well have boosted ethylene needs to as high as 650 million lbs.

Another 31% of the country's ethylene supply is being cut three ways: for the manufacture of styrene

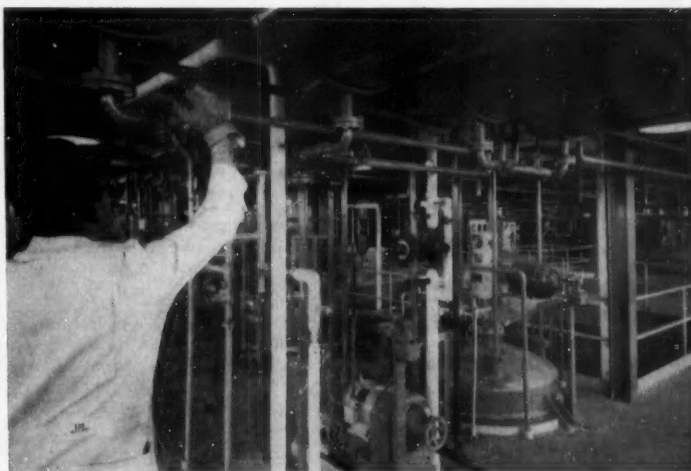
(11%), polyethylene (10%), and ethyl chloride (10%). Ethylene dichloride, ethylene dibromide, and miscellaneous demands follow with 7%, 2% and 5% slices, respectively.

**Poly Impact:** It will come as no surprise that polyethylene will play a dominant role in shaping ethylene's future. Expanding with startling speed, poly capacity leaped from 125 million lbs. in '52 to about 425 million in '55.

Plants now being built will boost capacity to around 600 million lbs. by the end of this year; and some marketers predict a leveling off at 800-850 million lbs. in '58.

These capacity estimates obviously do not reflect the actual amounts of ethylene that will be needed for poly-making during each of these years since it's generally conceded that a sizable excess of polyethylene capacity is in the offing.

Nonetheless, production of polyethylene is bound to grow rapidly even if the nation's full capacity is not immediately utilized. Not to be over-



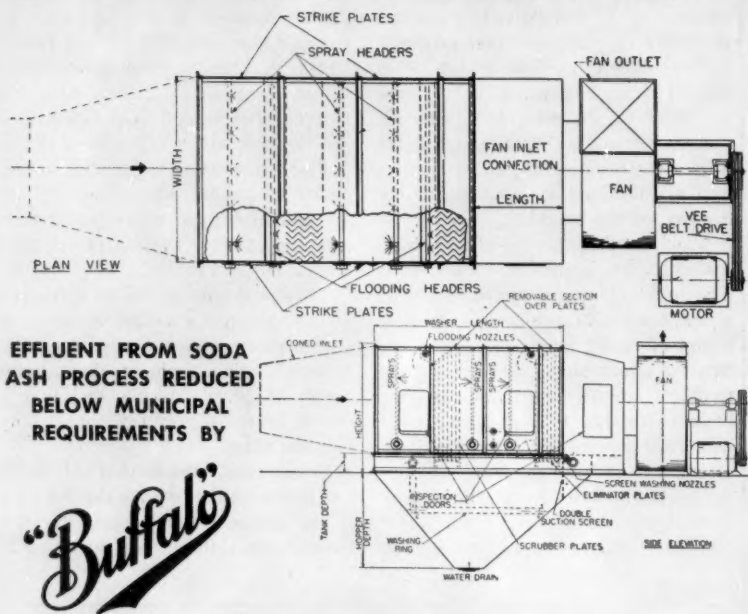
## No Ceiling for Silicones

SOARING SILICONES sales, now heading toward \$50 million/year, are beginning to strain present U.S. productive capacity. But more silicones are on the way: Dow Corning's expansion (*see cut*) at Midland (Mich.) is poised at ready.

From a standing start in the mid '40s, silicones have come on

fast—'55 sales, for instance, totted to some \$40 million. End-use applications, say boosters, number well over a thousand. Tanning agents, defoamers, coatings, electrical insulation, polishes, gasketing are heavy consumers. In sight: expanded use in auto tires, household lubricants, medical supplies.

# AIR CLEANING IN THE PROCESS INDUSTRIES



**EFFLUENT FROM SODA ASH PROCESS REDUCED BELOW MUNICIPAL REQUIREMENTS BY**

**"Buffalo"**

**PROBLEM:** Exhaust gases from the manufacture of soda ash contained from 4 to 6 grains of salt per cubic foot of gas. Municipal regulations required a concentration of no more than .4 gr./cu. ft.

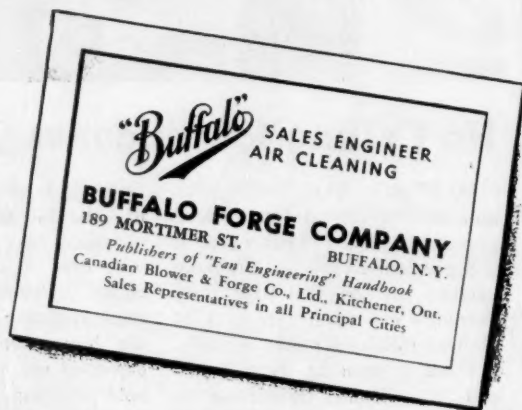
**SOLUTION:** A "Buffalo" TE Static Washer of 30,000 cfm capacity using recirculated water was selected. This unit, using triple banks of spray-wetted eliminator plates, does an efficient removal job with overall resistance of only .75 inches water gage. Low initial cost, low maintenance cost and constant performance as rated, made this "Buffalo" Static Washer the logical choice. Also, the unit is capable of handling higher concentrations, if desired.

**RESULT:** Tests showed the exhaust gases contained less than .4 grains per cubic foot (a cleaning efficiency exceeding 90%), thereby more than meeting municipal requirements for the effluent. More than five installations have been made for the same company.

**WHAT IS YOUR CLEANING PROBLEM?** "Buffalo" Engineers, air cleaning equipment and vast experience are ready to help you. Call on the trained "Buffalo" Engineer in any principal city for results like the above and countless other installations.



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FORCED DRAFT    COOLING    HEATING    PRESSURE BLOWING

## MARKETS . . . . .

looked is the coming of low-pressure poly, which, as many plastics experts opine, may not compete too much for the high-pressure material's outlets. If such is the case, it means a vastly greater demand for ethylene.

These optimistic projections naturally should not becloud the fact that ethylene does have to face competition. Acetylene, for one, will continue to make itself felt (*CW*, July 30, '55, p. 55).

A noteworthy case is in the manufacture of vinyl chloride, 45% of which is made from ethylene. Acetylene is the starting material for the other 55%.

But major threats are few on the ethylene horizon, and now, with polyethylene really hitting its stride, it would appear that halcyon days are ahead for ethylene, the big-time chemical progenitor.

## Potash Broadening

Rising world demand for potash is behind West Germany's plans for increasing output this year. Reason: the industry's export prospects are considered more promising, particularly in Asian and African markets. Paradoxically, the expansion is contemplated despite a decline in total sales during 1955.

Total sales last year are estimated at 1,570,000 tons (in terms of  $K_2O$ ), compared with 1,590,000 tons in '54. The decline occurred, however, entirely in domestic sales, which are down about 2% from the '54 level. Exports in '55 rose to about 700,000 tons, some 57,000 tons over the previous year. Significantly underscoring the health of the current economy: last year's out-of-country potash shipments from West Germany were more than 50% higher than exports for the whole of Germany in 1938.

The unsatisfactory development of domestic sales is attributed chiefly to the fact that extensive purchases of agricultural machinery placed a heavy financial burden on farmers, leaving less money for fertilizer buying. However, the industry hopes for a recovery in sales on the home market in '56, particularly in southern Germany.

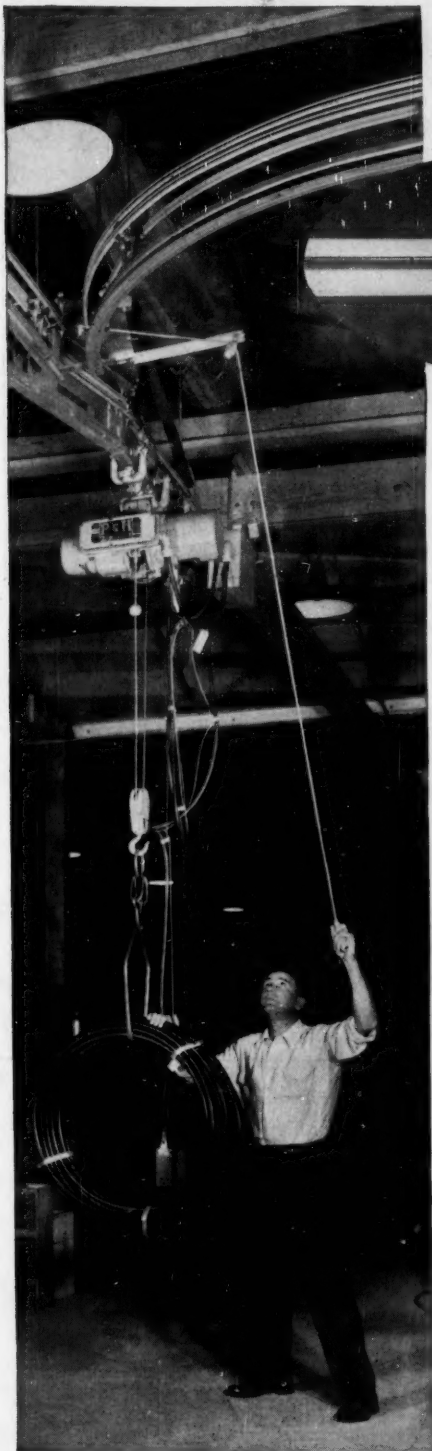
Production in 1955 totalled about 1,700,000 tons, compared with 1,610,000 in '54—an increase of only 4% vs. a 25% jump in 1954. Output then increased by about 296,000 tons.



**Another new development using**

# **B. F. Goodrich Chemical** *raw materials*

*B. F. Goodrich Chemical Company does not manufacture this extrusion. We supply only the Geon rigid vinyl materials.*



## **Rigid Geon packs power in small space**

**N**AKED wires on an overhead power lift are a hazard, lose power along the line and have to be spaced widely where multiple electrical contacts are needed in large plants. As a product improvement, a manufacturer has designed U-shaped extruded insulation made of Geon rigid vinyl that has many advantages for the job.

The rigid vinyl extrusion carries a metal contact conductor safely so that as many as three to twelve power lines can be installed close together where space is tight. Because this insulation is made of Geon rigid vinyl it has high dielectric strength, high insulation resistance with low power loss. It has good chemical and abrasion resistance, necessary for long life in industrial plants and it can be colored according to local code requirements.

This installation you see here is a good example of a new use for Geon rigid vinyl. It may suggest a new use to you or may give you an idea for another saleable product. There are scores of other uses for Geon materials from rigid sheeting to rigid pipe and fittings. For technical help in the uses of versatile Geon please write Dept. S-2, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.



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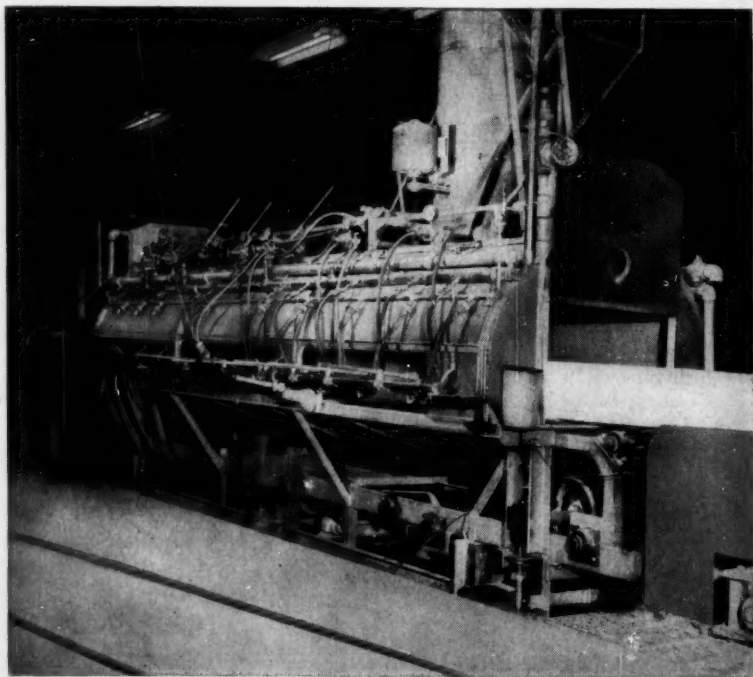
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VC-6-1R

# Market

## Newsletter

CHEMICAL WEEK  
February 4, 1956

**Selenium continues at the top** of the list of tight items. Confirmation of this situation comes in the form of a whopping \$5/lb. price increase which now sets the tab at a high of \$15.50.

Incidentally, exports in the first quarter of this year will probably run about 6,000 lbs. Too, exporters may be forced to apply for amended licenses in the face of this latest boost.

**Moving toward a realization of the prediction** that chlorine supplies will be freer in '56 (*CW, Market Newsletter, Dec. 24, '55*), supply and demand have shifted into somewhat better balance than they've been in for some time.

Nonetheless, tight situations do prevail in some localities, but there's hope that these too will gradually ease. Prices, incidentally, seem to be on a pretty stable footing.

**Despite the recent drop in lead prices**, lead acetate is now sporting significantly higher labels. A \$1.50/cwt. hike—the first change since 1952—sets the cost at \$23.50. Reasons for the increase are summarized as “accumulated costs of manufacture.”

**The strength of reinforced plastics**, marketwise, is underscored by statistics just released by the Society of the Plastics Industry. Over-all growth of this plastics use in '55, it's said, is about 40%.

Polyester resin consumption by fabricators was approximately 49 million lbs., or 80% more than the 27 million lbs. used in '54.

Other raw materials, e.g., epoxies, low pressure phenolics, melamines, silicones, and fluorocarbons also saw increased use.

Impressive, too, are the advances predicted for this year. Polyester resins, for example, will hit a 73-million-lb. high—some 50% more than in '55.

**The growing importance of phosphorus in animal feeds** (*CW, Jan. 21, '56, p. 80*) is this week underlined by Monsanto's introduction of a new liquid phosphate solution.

To be marketed as a “phosphate feed solution,” the supplement will compete with dry forms (notably dicalcium phosphate) presently used by the feed industry. According to the calculations of Monsanto marketers, use of the solution will make possible savings of about \$9/ton of supplement equivalents.

The solution contains a minimum of 23.7% phosphorus, compared with a reported 18 to 21% in conventional dry forms.

Sale price of the new material is \$85/ton; the unit price of phosphorus, f.o.b. manufacturing point, figures out to be \$3.59/ton.

**More than a shade lighter** is the new tag on Wyandotte's dry bleach ingredient, Halane (DDH). The cut—a full 20%—brings the carload price down to 40¢/lb. Expanded markets and improved manufacturing techniques, it's reported, make the slash possible.

Wymat Chemical (the only other DDH producer) has been sitting tight, but will probably soon follow Wyandotte's lead.

**Is a gentle slowing of industrial production in the offing?** More buyers seem to think so. In the National Assn. of Purchasing Agents' January survey,



## Market Newsletter

(Continued)

13% of those contacted anticipate lowered output—only 5% held that opinion in December; and only 33% of the purchasing agents foresee higher production rates, compared with 40% a month earlier.

Not surprising, of course, is buyers' consensus that price trends will continue upward. Rubber and vinyl resins, they feel, are among the few commodities that may show some easing. As a matter of fact, further decreases for the latter were anticipated when a shaving of polyvinyl chloride resin prices was noted a few weeks ago (*CW, Market Newsletter, Jan. 14*).

Heading for higher prices, according to the survey, are zinc, titanium dioxide, and lead. Inclusion of lead in the list is surprising, however, in light of the recent ½¢/lb. price cut and a fairly widespread belief that lead prices are still to high (*CW, Market Newsletter, Jan. 21*).

In short supply, say the purchasing agents, are: aluminum, copper, nickel, selenium, titanium dioxide, and cellophane.

**More crude tall oil** for the nation's multifarious requirements will be pouring out at a 2,000-tons/month clip from National Container's newly completed installations at Jacksonville, Fla., and Valdosta, Ga.

But Johnny-come-lately buyers won't be able to tap this source soon, because the entire '56 output has already been sold, under contract, to six large users.

Also due onstream is West Virginia Pulp and Paper's new tall oil refinery at Charleston, S. C. Output will include tall oil, fatty acids, tall oil rosin, and tall oil pitch.

**Still pretty much of a newcomer** is polyurethane foam; but that isn't to say that it won't give other foams some stiff competition, justify predictions of a 100-million-lbs./year market by 1960 (*CW, Market Newsletter, Oct. 22, '55*).

It's already getting into use as a rug liner, bearing William T. Burnett Co.'s (Baltimore) tradename Unifoam.

Available in green and gray, in several widths, and in thicknesses of ¼ and ⅝ in., the foam will retail at approximately \$2.29 and \$1.98/yd. depending on thickness.

### SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending January 30, 1956

#### UP

	Change	New Price
Candelilla wax, crude, bgs. ....	\$ 0.05	\$ 0.55
Lead acetate, white, cryst., bbls. ....	0.015	0.235
Lead nitrate, bbls. ....	0.015	0.2375
Selenium, powd., dms., dlvd. ....	5.00	15.50

#### DOWN

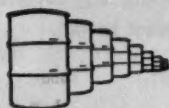
Mercury, metal, 76-lb./flask, net flask ....	\$ 3.00	\$275.00
Silver, bullion, ingots, cs. troy oz. ....	0.005	0.90
Tin, metal (Straits) ....	0.015	1.03

All prices per pound unless quantity is stated.

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**Hexalin**<sup>®</sup>

*Cyclohexanol*

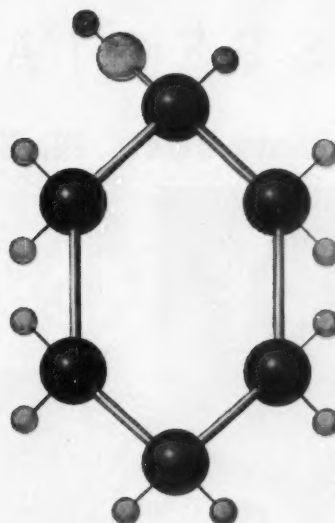
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*Cyclohexanol (C<sub>6</sub>H<sub>11</sub>OH)*



## SPECIFICATIONS:\*

- Boiling Range at 760 mm.: 160.0°C. Min. to 162.4°C. Max.
- Specific Gravity 25°/25°C.: 0.946-0.950

## PROPERTIES

- Clear, colorless, oily liquid with a camphoraceous odor
- Soluble in water at 20°C. to the extent of 3.6% by weight
- Water is soluble in "Hexalin" at 20°C. to the extent of 11% of weight
- Miscible with: Ethanol, ethyl ester, linseed oil, petroleum solvents, aromatic hydrocarbons and most other common organic solvents
- Dissolves alkyd resins, alcohol-soluble phenolic resins, ethyl cellulose.

## PRINCIPAL USES

**PLASTICS:** Ingredient used in the manufacture of ester plasticizers.

**DETERGENT:** Stabilizer and homogenizer for soap and synthetic detergent emulsions.

**PETROLEUM:** Intermediate for lubricating oil additives.

**TEXTILES:** Stabilizer and homogenizer in textile soaps; stabilizer for emulsions; solvent for dyes; kier boiling assistant.

**FINISHES:** Solvent in lacquers, shellacs and varnishes; high boiling solvent in nitrocellulose lacquers to retard evaporation and prevent blushing.

\*Partial Listing

**METAL:** Degreasing agent; solvent in metal polishes.

**MISCELLANEOUS:** Dry-cleaning fluid ingredient; solvent in furniture polishes, shoe creams and floor waxes.

## GENERAL ADVANTAGES

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# SPECIALTIES . . . . .

## New York, N. Y.: Convenient, Congested



Paisley Products, Inc. (adhesives) has this plant in Manhattan, another inside Chicago, must be able to deliver fast.

### Paisley likes the city because:

- Service to industrial customers is quick.
- Labor is good.\*
- Equipment makers are handy.
- Drums (particularly reconditioned ones) are easy to get.

### But doesn't like:

- Bringing in everything by truck.†
- Small loading space.
- Giving extra benefits to attract office help.

\*Labor, says Paisley, is easier to get and cheaper in New York than in Chicago.

†Chicago plant has a rail siding. In New York, Paisley uses one or two trucks which run back and forth between trucking bases in New Jersey.

## City or Country? Plant Site Poser

Thanks to a number of good business years, many specialties makers today find themselves facing the problem of expansion.

In locating their first plants, specialties makers almost always follow the same rule: put it in the home town. It's often a sensible practice, even though it's usually based on the fact that the founder wants to keep living there.\* A man is better off doing business in a place where he is known, has ready-made contacts, and a familiarity with many of the things he needs to know in selecting a plant site.

### Second Plant Problem

Locating the second plant, however, often brings unfamiliar difficulties. To find out how specialty makers weighed the various factors (and how they would second-guess them now) *CW*

\*An example is Harold Schaefer and his Gold Seal Co. (Glasswax), which is located in Bismark, N.D. (pop. 18,640), because that's where Schaefer was located. Possible difficulties in manufacturing there are avoided by contracting all jobs to various private-label houses about the country.

recently interviewed executives across the country. Results appear in the case histories on these pages. From these cases, and many others, *CW* has distilled these ideas of location-choosing:

**Market:** Most makers would rather be close to their market than to their raw materials. Here's why:

- Raw materials are freight-equalized.
- High shipping costs of packaged specialties are minimized.
- Fast delivery is insured.
- Communications with sales force are better.
- High-quality labor goes with a rich market.

Being close to the market doesn't necessarily mean right in a metropolitan area, however (except in the case of some industrial specialties makers). S. C. Johnson and Sons, for example, finds that at Racine, Wis., it has small-town advantages, while it is conveniently on the road between Milwaukee and Chicago.

**Labor:** Because specialty payrolls

are usually small, labor cost generally isn't a decisive factor. That's why the South's low-cost labor has lured few specialties makers from other areas. Most of the Southern firms contacted by *CW* were either doing only a local business or were founded by Southerners.

Labor costs may not be all-important, but you do have to consider your ability to compete for quality labor. Some things to watch for are:

- Intense competition in industrialized small towns.
- Competition from burgeoning building trades (which pay well for mechanical help) in big cities.
- Difficulties in getting people to and from work.
- Unpleasant neighborhoods, which repel white-collar help.

Says an executive of Judson Dunaway Corp. (sanitary chemicals), with plants in both Dover, N.H., and Kentland, Ind.: "Any company that requires a small payroll can't miss by settling in a small town—you get a more sincere-type employee."



**Brains:** The availability of technically trained men is often cited as one of the reasons for the concentration of specialties makers in the New York area. There's a tendency for men to live where they were trained, and the great concentration of technical schools gives this area a surplus.\*

There's far from unanimity on this score. Others point out that technical help is better dispersed than are plants, and that other areas thus have a better technical-man/plant ratio.

**Suppliers:** Specialties firms requiring a lot of equipment find it pays to locate near machinery makers—generally around New York or Chicago where they get:

- Faster replacement of parts.
- Personal service.

Ultra Chemical Co. (contract detergents) finds that its plant at Paterson, N.J., is close enough to New York to get 24-hour delivery on all machinery, deal with people it knows on all equipment orders.

Container suppliers are handy to most sections of the country, but out-

side of large metropolitan areas it's harder to find used metal drums, fiber-board drums and drums with baked-on linings.

### Zeroing In

**After selecting** the region in which he wants to operate, the specialty maker must pick out the exact spot. Here he must take into consideration such things as the physical facilities available and the community's attitude toward industry.

**Railroads:** It's generally agreed that one of the most important things to find is a railroad siding. You can do without one, but a siding gives you:

- Material-buying flexibility—the best price may be on tank-car lots.
- Labor advantages—cars can be unloaded more leisurely than trucks.
- More storage space—cars can often be used as warehouses.

Loading space for trucks can be short in some places, too. Simoniz (polishes) found it didn't have enough in Chicago, moved to small, nearby Kankakee, Ill.

**Local:** Other things to watch in picking a site are:

- Cost and availability of utilities.

- Adequate sewage disposal.
- Fire, building, and pollution codes.

- Taxes.

**Buy?** If it has the money, a specialties firm will usually buy or build, rather than lease. Most companies are reluctant to put a lot of costly and hard-to-move equipment into a building that it could lose at relatively short notice. Against this are the questions of whether it is a good idea to tie up capital in real estate, and which way gives a better tax deal. There's no rule applicable to all cases, but most substantial-size firms prefer to build.

**Where Then?** There are in the United States nearly 5,000 cities of over 2,500 population, plus as many or more smaller towns—each of which could potentially be the location of a specialties plant—and each having different qualifications for the job. Finding the perfect site for your plant, therefore, could theoretically become a years-consuming activity. But, by narrowing the list along lines such as those suggested above, you probably can quickly reduce the list to the few spots that best fit your needs. After that you're on your own.

\*Part of the reason why the membership of the Northern New Jersey chapter of A.C.S. is about 7,500, whereas the Southern California chapter, itself one of the largest, has about 2,000.

## Vernon, Calif.: Roomy, Distant

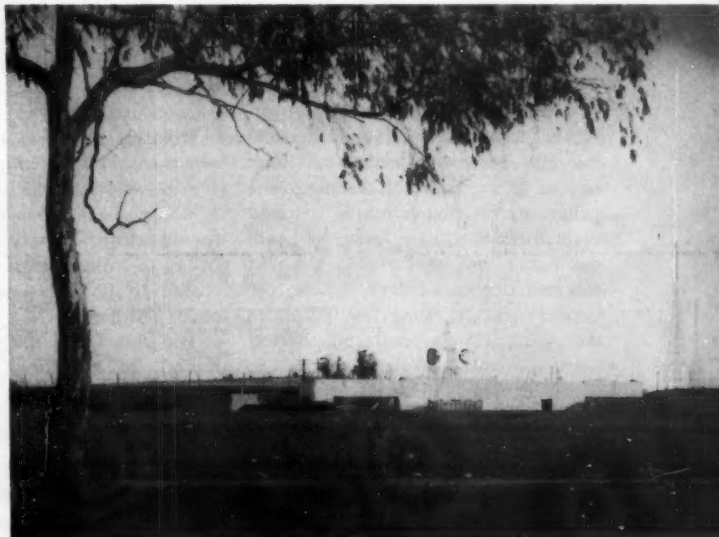
Turco Products, Inc. (industrial cleaning compounds) has this plant near Los Angeles, others in Joliet, Ill., Newark, N.J.

### Turco likes its small towns because:

- Workers don't have transportation problem.
- Pleasant neighborhoods attract dependable people.
- Shipping problems are minimized.
- Regulations are easier.

### But doesn't like:

- At Joliet, the distance from customers and the competition for labor.
- In California, the air pollution problem.





**GREAT PRODUCTS' BARTON:** For auto cooling-system ills, he has an . . .

## Assembly Line Additive

Plain water leaves little to be desired as a cooling medium for automobile engines. But the little that is left has been base enough for several profitable specialties businesses—the antifreeze industry, for instance.

Aside from an undesirable freezing point, water has one other serious cooling-system shortcoming: its property of rusting metal and creating scale inside engine and radiator. Looking for a way to cure this fault, provide leak protection, too, led Fred D. Barton of Holly, Mich., to build a specialty business that ran a \$150-investment up to \$1 million in 8 years.

**Two Out of Three:** His Great Products, Inc. (Holly, Mich.) furnishes water-conditioning pellets to two out of every three new cars built in the U.S. Called Insealators, the pellets are claimed to inhibit rust and scale formation, stop leaks, lubricate the pump seal, and repair holes in the radiator and block. Now the same product is being retailed under the name NS (pronounced, Barton suggests, "ends") Water Loss.

On service station display racks, the pellet will face rivals that it doesn't have in Detroit's assembly plants. There is competition from other brands of water-soluble, oil-base products—Warner Patterson Co. (Cleveland)

and R. M. Hollingshead (Camden, N. J.) make them (and Hollingshead's are often sold under the oil company's own label), as does Mac's Super Gloss Co. (Los Angeles). Too, Du Pont has a hard-hitting campaign for its "chemical" type of inhibitor.

Mac's (selling 3 million cans of radiator products annually, itself) points to twin problems facing NS: low profit per sale for the station operator could mean he won't push them vigorously; the pellets are touted for several jobs (primarily leak-stopping), whereas other lines have a product for each job, each of which offers a profit.

**Roots and Ginger:** Barton's pellets are made of an alcohol emulsifying-type soluble oil, which raises the pH of water; rhizex, a name Barton coined for exhausted particles of rhizomes (roots of certain tropical plants) included to fill holes and wipe away scale; and ginger.

The rhizex has the property, says Barton, of shrinking approximately 15% when mixed with oil, but when poured into a cooling system, it regains its original size. The particles expand further after finding their way into cracks in the metal where they are dried by the heat of the engine.

The heat further hardens them into a carbonaceous resin that withstands compression.

Another value claimed for the rhizex is its continual "sweeping" action in the cooling system; this keeps the water and oil (the rust inhibitor) from separating. Although the oil alone did a good job against rust—and, by itself, was Barton's original product—it forms a detrimental scum along the sides of the cooling system. (The addition of granular matter isn't original with Barton—Mac's, for example, includes wood and methyl cellulose fibers.)

**'Them That Can':** At the end of the war, Barton was running a school in salesmanship in San Francisco. Needled by the constant jibe: "Them that can—does; them that can't—teaches," he decided to put his teaching to practice. Noticing that the rust-scale inhibitor market had been expanding since the introduction of the greaseless, sealed-pack type of water pump in 1941,\* he chose this door to knock on.

He, himself, sold the oil-type inhibitor from service station to service station, giving operators free lessons in window dressing, a few salesmanship hints, and brief lectures on the intricacies of an automobile cooling system.

When the separation problem was licked with the rhizex† (making a solution called Bar's Leaks), Barton figured he had something he could approach Detroit with. Buick was interested, but thought that pouring or lading the mixture into each radiator would be impractical on a production line.

Barton worked out a method of extruding the concentrate, dipping it in a water-soluble solution to insure its keeping shape, and brought back a pellet. Buick signed up to use it.

Barton is now selling to all but three makes of automobiles (with all makers represented by at least one line), is enthusiastic about the retail product. Since first put in a filling station in October, 600,000 pellets have been retailed. The new factory at Holly has an output of 2.5 million units/month, to which is added the

\*Earlier water pumps leaked a steady stream of grease into the cooling system, a fairly efficient deterrent to rust and scale formation.

†By former associate Bill Wallace, who has since left to form his own company and take a crack at the Detroit market.

output of concentrate from the San Francisco factory (which supplies all franchised dealers in this country and Canada, plus an Australian factory).

## EXPANSION. . . . .

**Growth Step:** In what it terms "the greatest plant and personnel expansion program in its history," Connecticut Chemical Research Corp. (Bridgeport, Conn.) last week took steps to double its present production facilities. Acquisition of the 40,000-sq.-ft. former Locomobile plant in Bridgeport brings production area to about 100,000 sq. ft.; daily output is set at 250,000 aerosols.

**Parathion Plant:** American Potash & Chemical Corp. will soon be making, not buying, its technical parathion. New plant under construction in Los Angeles (Vernon) will be in production this year; output will go to American Potash and to California Spray-Chemical Corp.

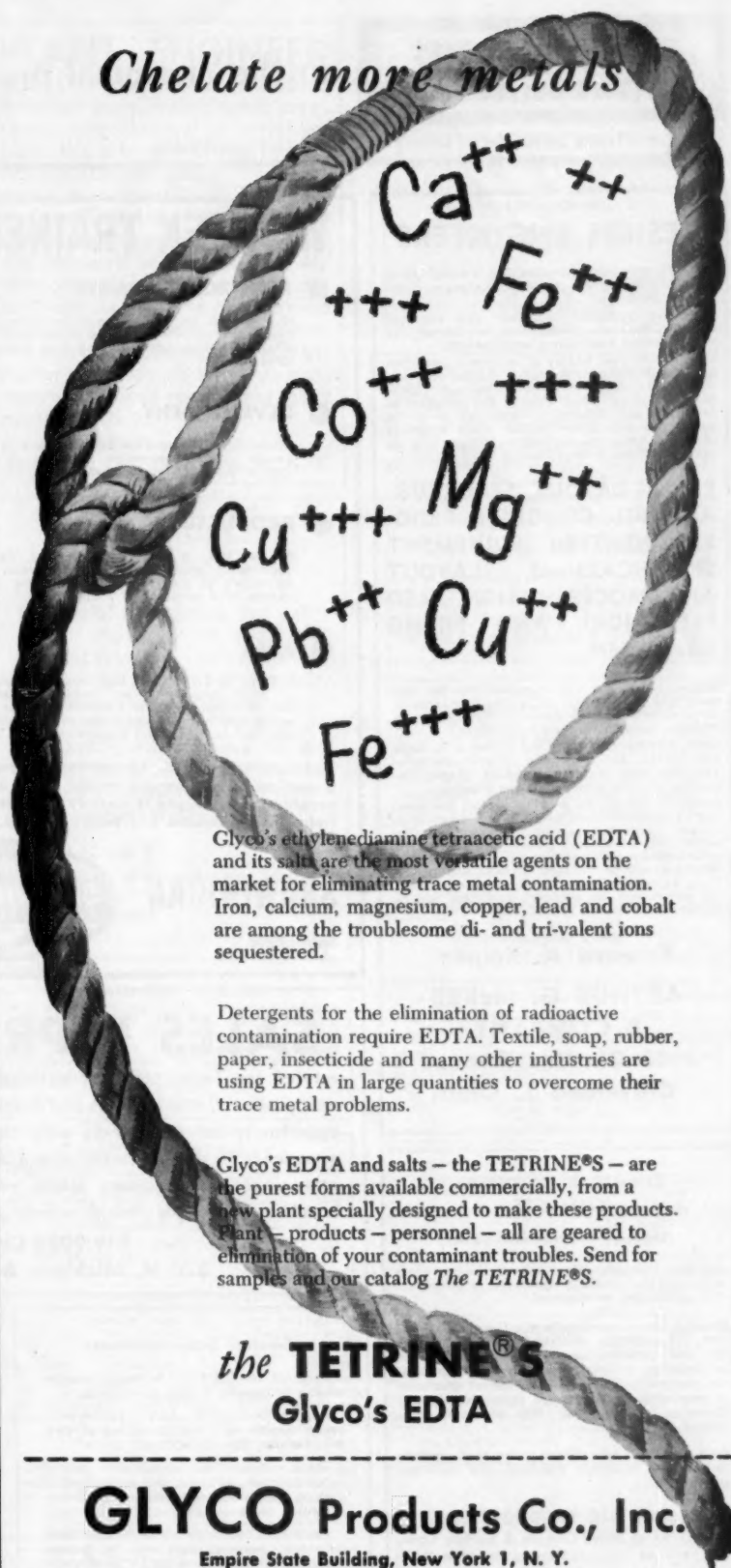
**Poison Center:** Oxford, Ala., gains the distinction of being the only town in the U.S. where sodium fluoroacetate (Compound 1080) is manufactured. Tull Allen has founded Tull Chemical Co. there; with a process, trademark, and manufacturing equipment purchased from Monsanto, it will be making the potent rat killer.

## PATENTS . . . . .

**Water Barrier:** Broad applications are promised for a new resinous water-proofing composition from Eastman Kodak Co. (British Pat. 742279). An acrylic ester polymerized with a vinyl polymer, the compound is said to be a barrier to water, but not to water vapor. Eastman suggests it for coating leather, textiles ("breather" fabrics) or even for use in water-base paints.

**Solid Syndet:** Three steps to a solid high-density synthetic detergent (anionic sulfated and sulfonated water-soluble detergents) are outlined by Purex Corp. in a recent patent (British Pat. 741806): an air-conditioning, aqueous slurry of the detergent is first treated with other solid additives; the mixture is then de-aerated in a low-pressure chamber, is dried to a solid in a third step.

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**SW 8822 Chemical Week**

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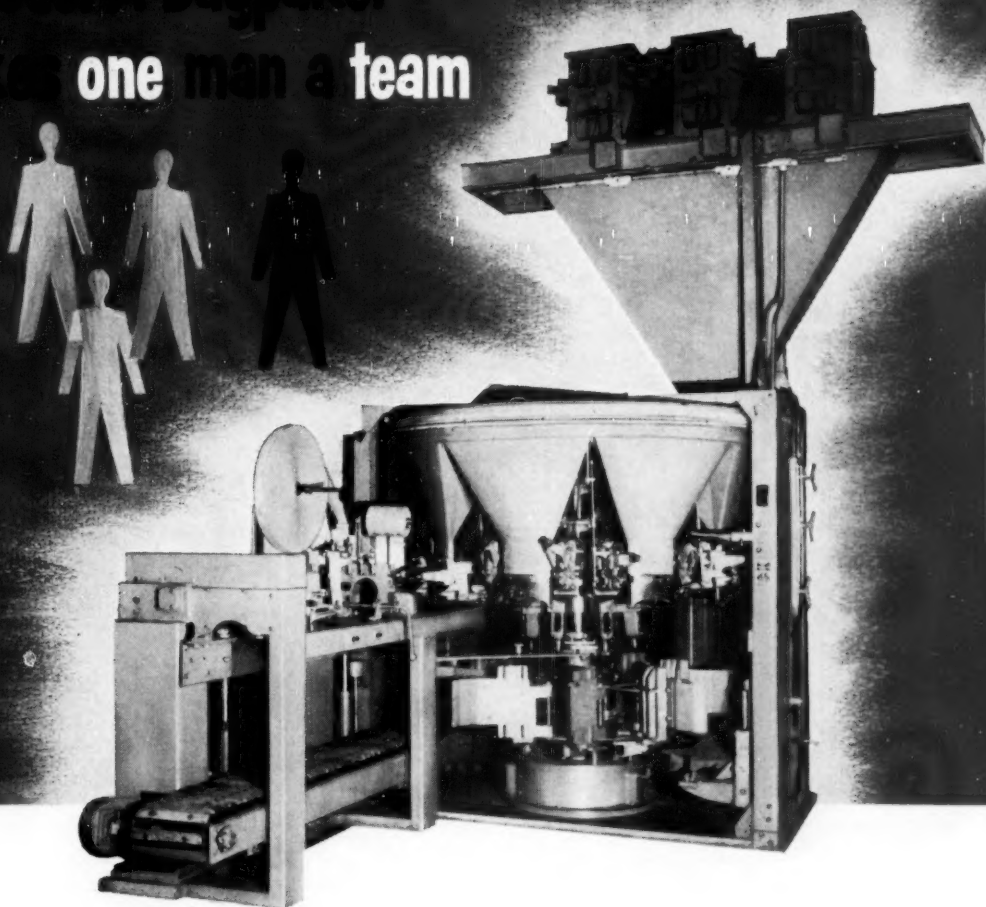
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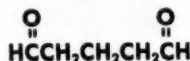
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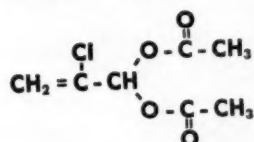
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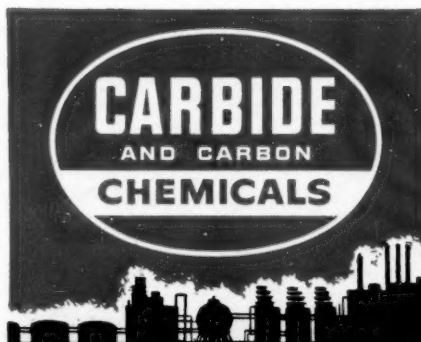


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Specific Gravity at 20/20°C .....	0.9919	1.074	1.213
Vapor Pressure at 20° C. ....	< 0.01 mm. Hg	17 mm. Hg	0.09 mm. Hg
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